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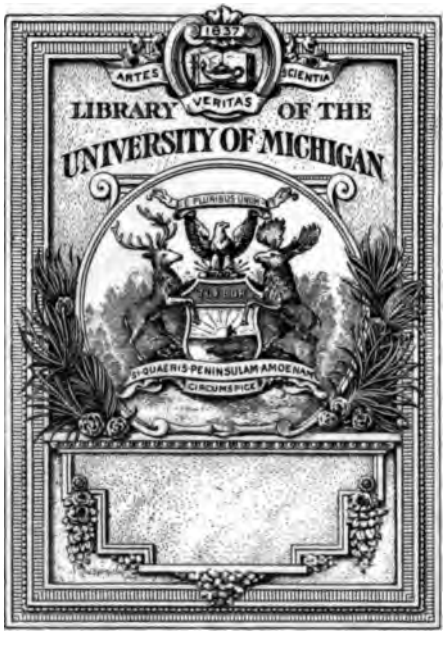

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REPORTS OF THE

DEPARTMENT OF THE INTERIOR

FOR THE FISCAL YEAR ENDED JUNE 30

1908

ADMINISTRATIVE REPORTS

IN 2 VOLUMES

VOLUME 1

SECRETARY OF THE INTERIOR
BUREAUS, EXCEPT OFFICE OF INDIAN AFFAIRS
ELEEMOSYNARY INSTITUTIONS
NATIONAL PARKS AND RESERVATIONS

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1908

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Administrative reports, in 2 volumes.
- Vol. I. Secretary of the Interior.
  Bureaus, except Office of Indian Affairs.
  Eleemosynary Institutions.
  National parks and reservations.
- Vol. II. Indian Affairs.
  Territories.

Report of the Commissioner of Education, in 2 volumes.

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REPORT OF THE SECRETARY OF THE INTERIOR.

58920—INT 1908—VOL 1——1

BUREAUS OF THE INTERIOR DEPARTMENT.

GENERAL LAND OFFICE.

Organized as a bureau of the Treasury Department under act of April 25, 1812 (2 Stat. L., 716).

First Commissioner, Edward Tiffin, of Ohio; appointed May 7, 1812.

Became a bureau of the Interior Department when that Department was organized under the act of March 3, 1849 (9 Stat. L., 395).

INDIAN OFFICE.

Organized as a bureau of the War Department under act of July 9, 1832 (4 Stat. L., 564).

First Commissioner, Elbert Herring, of New York; appointed July 10, 1832.

Became a bureau of the Interior Department when that Department was organized.

BUREAU OF PENSIONS.

Organized as a bureau of the War Department under act of March 2, 1833 (4 Stat. L., 622).

First Commissioner, James L. Edwards, of Virginia; appointed March 3, 1833.

Became a bureau of the Interior Department when that Department was organized.

PATENT OFFICE.

Organized as a bureau of the State Department under act of March 4, 1836 (5 Stat. L., 117).

First Commissioner, Henry S. Ellsworth, of Connecticut; appointed July 4, 1836.

Became a bureau of the Interior Department when that Department was organized.

BUREAU OF EDUCATION.

Organized under act of March 2, 1867 (14 Stat. L., 434).

Became a bureau of the Interior Department July 1, 1869, under act of July 20, 1868 (15 Stat. L., 106).

First Commissioner, Henry Barnard, of Connecticut; appointed March 14, 1867.

GEOLOGICAL SURVEY.

Organized as a bureau of the Interior Department under act of March 3, 1879 (20 Stat. L., 394).

First Director, Clarence King, of New York; appointed April 14, 1879.

RECLAMATION SERVICE.

Organized under act of June 17, 1902 (32 Stat. L., 388), under the Director of the Geological Survey, Charles D. Walcott.

First Director, F. H. Newell, of Pennsylvania; appointed March 9, 1907.

REPORT OF THE SECRETARY OF THE INTERIOR.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., December 23, 1908.

SIR: I have the honor to submit the annual report of the Department of the Interior. The reports of the bureaus, offices, institutions, and Territories under the supervision of the department are presented herewith.

GENERAL STATEMENT.

The year's work has proved the value of the reorganization of the Department. By throwing full responsibility upon the heads of the bureaus, by coordinating their work, and by close cooperation between the Secretary's office and the heads of the offices and bureaus it has been possible to constantly improve the methods of administration. The changes made have for their purpose the simplification of business without any loss in accuracy or responsibility.

The frequent conferences between the Secretary and the heads of the bureaus and offices have grown in usefulness. They have brought about a closer cooperation between the bureaus engaged in similar or kindred work, and have resulted in doing away entirely with causes for friction, misunderstanding, and consequent delay in transacting business.

One interesting result of the new organization has been the personal interest which it has aroused among the officials and employees. The knowledge that improved methods, when found adaptable to government business, would be accepted has induced some employees to give great care and attention to the thoughtful study of methods for the simplification and improvement of their own work and its relation to the general work of the department.

The loyal support given by the employees of the department in the work of reorganization is especially gratifying.

During the summer I visited the Territory of Hawaii and various reclamation projects, Indian agencies and reservations, and land offices.

INSPECTION.

The change in the method of inspection of the outside services of the department has been very beneficial. The country is now divided into six inspection districts, to each of which a special inspector is

assigned. His duties cover the inspection of all the various outside offices under the department. Inspections of each office are frequently and thoroughly made. They cover the examination of accounts, the inspection of the physical condition of the public property, and an investigation into the general conduct of the official in charge and his employees. The inspections have resulted in many improvements.

PERSONNEL.

The total number of persons employed is 18,770. Of these, 4,396 are in Washington. The classified service has been extended to positions under the Land Office, the Indian Office, the Bureau of Education, and the National Parks, covering a total of 618 positions.

It is to be hoped that Congress will provide for a reclassification of all the employees of the Government and a readjustment of the salaries. No one administrative change is more needed than this. It would enormously increase the efficiency of the public service. In addition to reclassification, adequate provision should be made for the retirement of employees who have given long and meritorious service.

Under the law providing for the compensation of employees injured in the public service there have been about 50 cases reported by the Interior Department since the 1st of July of this year.

While it is too early to judge the value of this law, I am confident that it is a wise one, and is based upon the proper principle.

BUILDINGS.

The total rent roll of the department is $44,200, and I again urge the need of providing permanent quarters for the offices and bureaus which are now in rented buildings. It is false economy to provide inadequate and nonfireproof buildings. Property of the Government under the control of the Geological Survey, the Bureau of Education, and the Reclamation Service, of very great value and much of which could not be reproduced, is in buildings not fireproof. A fire occurred in the Geological Survey building on December 16. Fortunately the promptness and efficiency of the fire department averted a serious loss, but this accident emphasizes the need of a proper building. The estimated loss is $20,000.

I have used some space in the Pension Office for the growing needs of the Indian Office, Geological Survey, and the Civil Service Commission, yet these changes are but makeshifts. The old Post-Office building is seriously overcrowded. Both that and the Patent Office building are in need of extensive repairs. I can not urge upon Congress too strongly the need and the wisdom of providing buildings in accordance with the submitted estimates.

OFFICE OF ASSISTANT ATTORNEY-GENERAL.

The force in the office of the Assistant Attorney-General was used during the fifteen months prior to July 1, 1908, principally to bring the routine work of that office more nearly current. At the same time greater activity in the field and the bureaus caused an increase of more than 20 per cent in the number of appeals received. Appeals pending were nevertheless reduced from 958 on March 1, 1907, to 330 on July 1, 1908. When it was found that the appealed cases, the principal routine work of the office, were nearly current, some of the force of the office was detailed for other important work. Thus, in cooperation with the Department of Justice there was instituted a closer scrutiny of the land litigation both in the District of Columbia and throughout the public-land States. As a result it was found that nearly 100 suits had lain dormant for periods varying from ten to twenty years, and that in three or four hundred actions nothing had been done for more than two years prior to that time. All these cases were taken up in the field in a conference between the United States attorney, an examiner from the Department of Justice, and the chief of field division of the General Land Office, or the corresponding field officer of the Indian Office, Reclamation Service, or Geological Survey, respectively. These committees reported concerning each suit in each district with recommendation (1) that certain definite cases, in which there was no possibility of obtaining convictions or judgments, should be dismissed and cleared from the docket; (2) that those cases in which there was not sufficient evidence at hand, but reasonable hope of supplementing the evidence, should be handed over to the chief field officer of the bureau concerned to procure the necessary additional evidence under direction of the United States attorney; and (3) that those cases where the evidence on hand was sufficient should be pressed vigorously to a definite judicial determination.

In the District of Columbia there have been instituted an unusual number of mandamus and injunction actions against the Secretary of the Interior growing out of the settlement of the affairs of the Five Civilized Tribes. The Assistant Attorney-General's office has vigorously cooperated with the Department of Justice in the defense of these suits, the work in this direction requiring the time of at least one assistant attorney. The rules and regulations of the department have been scrutinized with great care to see whether the practice now in vogue meets the conditions of the present time, and assistant attorneys in this office have been continuously assisting to prepare reasonable modifications of these rules. It has also been found wise to detail assistant attorneys from this office upon specially important work in the field, either because of their peculiar knowledge of the particular work or to supplement the work of the bureaus.

The result of this new routine work in the Assistant Attorney-General's office has been that the force available on the old routine work has been cut down from 21 assistant attorneys on March 4, 1907, to 16. Since the work has increased over 20 per cent, it is found that the diminished force is obliged to exert itself to the fullest reasonable extent to keep abreast and maintain the work in a current condition. The new assistant attorneys provided for in the appropriation act of last year are detailed by the Secretary for such work in his own office or the bureaus as he may find necessary and economical. The need for them was caused by the breaking up of the old divisions in the Secretary's office and the necessity for watchful care to see that the change, with all its economies, should not do harm to the interests of the Government.

In cooperation between this office and the Indian Office a new plan was inaugurated for protecting the allottees of the Five Civilized Tribes. When it was found that Congress would undoubtedly remove the restrictions from 70,000 of those allottees, thus taking restrictions from approximately 9,000,000 acres of Indian land, Congress was asked and gave an appropriation of $90,000 for the maintenance of local district offices advantageously scattered throughout the Five Civilized Tribes; also, $50,000 for the use of the Attorney-General in bringing suits to clear cloud from the title of Indian land. Immediately after Congress adjourned the Department of Justice, the Assistant Attorney-General's Office, and the Indian Office joined together in arranging to discover the existing clouds, to bring suits to remove them, and to establish the most effective and economical district agent force possible. The result is that there are 14 district agents continuously in touch with the Indians and their needs; also that thousands of suits to remove clouds from title, especially of those lands which would be unrestricted on July 27, 1908, were instituted before that date. The need for such action is shown by the fact that this department has found over 23,000 such clouds upon the title of the Indians. The bringing of these suits, the establishment of the district agent's offices, the conferences held with the more ignorant Indians at various places throughout eastern Oklahoma, have all led to their protection from the loss of millions of dollars. If the suits had not been started or had not been in immediate contemplation each of these Indians would have been at the mercy of the person who had the invalid deed recorded as a cloud upon the title. They would have been obliged to sell to these men at practically their own price, or to others at an exceedingly low price, on account of the outstanding cloud. The district agents were able in the case of minors' estates alone to save over $400,000 to the Indians within five months, and now that they are fairly organized

and established the return from their services will be much greater. The principal value of this action has been the deterring influence upon those who previously felt that they would need to account for their actions to the ignorant Indians only.

Another new class of work delegated to this office was the consideration of disbarment cases. I found that there seemed to be great looseness of ideals concerning the duties of attorneys to their clients, especially in the military bounty land warrant work. Certain firms of attorneys had obtained these valuable warrants for clients who knew nothing about the value of the warrant. Although the law specifically limits the attorneys' fees to $25 for any such case, some attorneys took advantage of their own knowledge that the warrant was ready for delivery and that it had great value to treat with their clients for the purchase of the subject-matter of the employment without disclosing the real value of the warrant involved. In this way they made exorbitant profits out of the purchase and subsequent sale. When cited to show cause why they should not be disbarred they pleaded, among other things, that they should not be held to as high a plane of ethics as attorneys before a court. On this question I held and hold the contrary. Their admission to practice is a practical notice that this department vouches for their integrity. The class of clients they are allowed to represent are often people needing help, such as old soldiers or their widows and orphans, pioneer homemakers, and Indians. The Government has always thrown every protection possible around these people. The courts have officially declared that they should be treated "tenderly." Congress has made it a criminal offense to directly or indirectly obtain from them more than a definite and small attorney's fee in connection with pension and bounty warrant cases. This department would be derelict in its duty, therefore, if it did not require attorneys practicing before it to conform to the highest professional standards. Three mandamus suits have been instituted to try to compel the restoration of names stricken from the rolls of practitioners for the reasons given above. The court of appeals has decided that the courts have no jurisdiction to review the Secretary's judgment in disbarment cases unless there was failure to give the disbarred attorneys "due process of law." Just what procedure constitutes "due process" will probably be determined in the Supreme Court before these mandamus suits are finally concluded. In the meantime attorneys will be notified, heard, and disbarred in all cases where I am satisfied beyond a reasonable doubt that their conduct as attorneys has been disreputable, fraudulent, illegal, or undoubtedly unprofessional. This duty is specifically imposed on the Secretary of the Interior by section 5 of the act of July 4, 1884 (23 Stat., 98).

GENERAL LAND OFFICE.

GENERAL DISCUSSION.

During the fiscal year ended June 30, 1908, there were entered 19,090,356.78 acres of public land, a decrease of 1,907,209.80 acres over the preceding year. There were embraced in entries completed during the year 8,068,044.85 acres which had been reported in original entries made in previous years and are not included in the above statement. Entries of all classes made last year numbered 205,459, a decrease of 2 per cent over the preceding year.

Total cash receipts from the disposal of lands during the last fiscal year were $12,490,426.28. Receipts from other sources were $225,283.18, making a total of $12,715,709.46, or an increase of 10 per cent over the receipts of the preceding year. The total expense of the district land offices for salaries, commissions, incidental expenses, and cost of depcsiting moneys during the last year was $842,112.45, an increase of $31,255.49. The aggregate expenditures and estimated liabilities of the public land service were $2,381,359.79, leaving a net balance of $10,334,349.67 in the Treasury.

Nine additional national forests were created during the year and 10 reduced in area. There are 165 national forests, embracing 167,976,886 acres.

Of the lands temporarily withdrawn under the forestry act, 1,283,851 acres have been restored to entry during the last year.

There were surveyed during the year 5,801,934 acres. These lands are located as follows:

Public lands surveyed during year ended June 30, 1908.

	Acres.		Acres.
Alaska	5,175	New Mexico	433,341
Arizona	234,269	North Dakota	185,790
California	4,801	South Dakota	280,091
Colorado	688,923	Oregon	273,316
Florida	36,622	Utah	354,159
Idaho	732,162	Washington	193,150
Minnesota	90,747	Wyoming	616,650
Montana	1,607,965		
Nevada	64,773	Total	5,801,934

The land office in Iowa is no longer needed. A bill was presented to Congress at its last session, but has not yet been acted upon. Its receipts during the last five years have been $5,085.21, and its expenses $7,817.18. This office should be immediately abolished and the records transmitted to the General Land Office, as has been done in the cases of the older States.

The reorganization in the General Land Office has been of the greatest advantage. After the changes in the office in Washington

had been completed the entire field service was reorganized. With the additional appropriations given by Congress 46 men have been added to the number of special agents since May 27, 1908, upon which date the 1908–09 appropriation became available, and the efficiency of the force has been greatly increased. Not only have the special agents been assigned to the different districts, but capable clerks from the General Land Office have been sent to the local land offices for the purpose of clearing up congested dockets and putting the local offices on a proper business basis. The result of these changes has been a very marked increase in the amount of business transacted. The following table shows the gain in the amount of work done during the years 1907 and 1908:

Business transacted by the General Land Office during fiscal years 1907 and 1908.

	1907.	1908.	Per cent increase.
Hearings before registers and receivers	300	1,115	271
Reports received from special agents	3,903	8,700	122
Reports disposed of	3,399	9,500	179
Unlawful inclosures of public land reported	136	254	86
Acres restored (unlawful inclosures)	259,918	762,941	193
Timber depredations reported	278	480	72
Fraudulent entries disposed of	9,251	11,662	26
Fraudulent entry hearings ordered	304	1,436	372
Homestead and timber and stone entries approved for patent	40,538	58,209	43
State selections disposed of (acres)	818,014	2,404,973	194
Original desert entries examined	6,298	8,310	31
Final desert entries approved for patent	2,114	2,462	16
Indian allotments approved	7,195	10,117	40
Swamp indemnity approved (acres)	0	30,639	All.
Swamp indemnity rejected (acres)	4,120	70,160	1,627
Lieu selections (act June 4, 1897) disposed of	478	1,269	165
Soldiers' additional homestead applications disposed of	96	702	639
Mineral contests closed	215	365	70
Mineral hearings ordered	75	128	70
Mineral entries approved for patenting or cancellation	1,445	1,847	28
Coal entries approved or canceled	157	205	30
Hearings ordered	75	128	70
Private appealed (docket) cases decided	1,223	1,462	19
Private unappealed cases decided	5,590	8,816	58
Entries canceled	5,146	8,042	56
Private land claims approved for patent	53	89	68
Small holding claims approved for patent	41	50	24
Lands in national forests restored to entry (acres)	49,335	204,514	314
Withdrawals and restorations of national forests examined	515	1,596	209
Reports upon new forests proposed	108	137	27
Patents issued	45,978	90,522	97
Patents transmitted	47,185	95,331	102
Certified copies of records furnished	18,517	19,420	5
Maps, diagrams, etc., for official use	2,799	3,288	17
Determination of cases of coal entries	20,000	33,853	69
Letters received and recorded or answered without recording	262,698	300,532	14

The reorganization of the field districts, the improvement in the force of special agents, and their methods of procedure have greatly increased the efficiency of the work of protecting the public domain against improper entries. Under present methods the honest entrymen have been helped in perfecting entries, dockets in the congested land offices have been cleared off or materially relieved, and the laws against illegal entries more rigorously enforced than ever before. The most serious condition in a local land office is delay in action upon pending cases; it not only results in great annoyance to individual entrymen, but affords the opportunity for speculators to initiate frivolous contests merely to compel the entrymen to pay something for a reliquishment or withdrawal of contest.

These entries, which may properly be termed "blackmail entries," almost wholly disappear when the business of a land office is current, because such an entryman never appears at a hearing to contest. His only chance for reward is delay, which will annoy and perhaps compel the real entryman to pay something to buy off the contest.

Great improvement has been made in the local land offices during the past year. I am endeavoring to obtain as registers men who are lawyers or who have such full knowledge of the public-land laws and practice as will insure a judicial disposition of the cases presented. Receivers must be men of good common sense; they must have a knowledge of bookkeeping and accounting. Both officers should be personally acquainted with the character and condition of the land within their district. I have found it necessary to recommend a change in a number of registers and receivers in order to obtain men with such qualifications.

The work of the special agents' force during the past year has been particularly gratifying. It is not yet large enough to take care of the growing business, but, as shown by the table above, its efficiency has been tremendously increased. A number of agents have been dropped, and others will be if they fail to show proper adaptability to the work. I have endeavored to obtain men who are acquainted with western conditions, who are qualified as experts if they be placed upon expert work, who are in full sympathy with the policies of the department, who are desirous of aiding in every way the honest entryman, and who are keenly alive to the need of preventing the dishonest man from illegally acquiring public land. It is extremely difficult to get men who have the all-around qualifications required of a good special agent. Of course the highest personal integrity is absolutely necessary, and in addition to the special qualifications I have above referred to a special agent needs tact and an ability to get along with all kinds of men.

The agents have been definitely instructed that they are not to presume any man guilty of violating the law; that they are to keep their own counsel and report to the department facts, not suspicions or

rumors; but they likewise understand that whenever the facts warrant they are to report against any man, no matter what his position.

We have passed the stage when we can now permit ignorance of the law or a belief that its nonenforcement was a custom to be offered as an excuse for its violation. It is gratifying to know that the action of the department through the agents and the local officers during the past year has met with the hearty approval of the citizens of the public-land States.

There of course have been and will be individual instances of conduct by public officials not in conformity with the policies I have outlined, but wherever such instances are brought to my attention I have endeavored to correct the fault and, in proper cases, to impose a penalty upon the public officer who has failed in his duty.

OPENING OF INDIAN LANDS.

In opening the Rosebud Indian lands in Tripp County, S. Dak., a new method of procedure was followed, which resulted in great saving not only to the Government and the individual applicants, but to the Indians as well. Heretofore, under similar openings, the services of 25 or more employees of the General Land Office have been required, while in this instance only 4 assisted Superintendent Witten. Therefore, the time and other expenses of such officers were saved to the Government.

The registration points were so selected as to greatly lessen the cost of transportation and other expenses to the homeseekers, and the designation of a number of such places prevented a congestion of the applicants in the vicinity of the land, and, while a detailed report of the expenditures has not yet been completed, I am advised that the cost to the Indians will be materially less than under previous openings.

The registration and drawing were held during the present autumn and the opening delayed until next March, to give the successful applicants time in which to provide themselves with funds necessary to make the required first payment, which, with the fees, will amount to $206 for a 160-acre tract entered prior to June 2, 1909. Moreover, the dates set for making entry are such that the homeseeker will be permitted either to move on the land selected by him and put in a crop during the season of 1909, or he may, if he so elect, postpone the establishment of his residence until September 1, 1909, or later if the entry is made after March 1, 1909, and thereby be enabled to put in a crop elsewhere.

CONSERVATION OF NATURAL RESOURCES.

The movement for the conservation of our natural resources shows that the people of the United States have fully awakened to the vital necessity of caring for what is left of the public domain. Con-

servation means not only preservation of our resources, but, as well, their wise and immediate use and the prevention of their misuse, whether by way of waste or monopolistic and speculative control.

The public domain has been placed by Congress under the Interior Department, and ample authority is vested in the Chief Executive and the Secretary of the Department to take such action as is necessary to care for the public domain. During many years the Executive has, in the exercise of this general authority, withdrawn at different times and for various purposes areas of the public domain and for the time being prevented those areas from being entered for private use.

Full power under the Constitution was vested in the executive branch of the Government, and the extent to which that power may be exercised is governed wholly by the discretion of the Executive, unless any specific act has been prohibited either by the Constitution or by legislation.

In the exercise of this power it is the duty of the Executive to take such action as will protect the interests of all the people of the United States in their property rights, and, if the occasion requires and the facts warrant, it is the duty of the Executive to prevent the acquisition of the public domain by private interests if such acquisition be detrimental to the public welfare.

If there be no power to affirmatively provide for the ultimate use or disposition of the public domain in accordance with the needs of the public welfare, it is the duty of the Executive to temporarily prevent its acquisition until Congress may have an opportunity to consider the question and adopt appropriate legislation.

This stewardship duty of the Executive is most concretely manifest in the care of the specific property known as the public lands and their resources. From the earliest days the Executive has found it necessary in the public interest to take action concerning the public lands by withdrawing areas from entry. There was no specific provision of law for many of those withdrawals, and yet they were made unhesitatingly by the Executive as steward and were approved by Congress in acts granting land for the purpose for which it was withdrawn. These were purely the acts of stewards farsighted enough to foresee and protect the interests of their principal, the people of the United States.

President Roosevelt's withdrawal in 1906 of more than 60,000,000 acres of land supposed to contain coal, in order that it might be classified and saved for its best use, and the recent withdrawal of phosphate lands for the benefit of our farms, are notable examples of the exercise of this power in protecting the public use of our resources.

The courts have upheld the power of the Executive to withdraw public lands, not only for public use, but also for the public welfare,

when in the judgment of the Executive the public good demands such action. The following are some of these cases: Grisar *v.* McDowell (6 Wall., 364); Wilcox *v.* Jackson (13 Pet., 498); Walcott *v.* Des Moines Co. (5 Wall., 681); Hamblin *v.* Lands Co. (147 U. S., 531); No. Pac. Ry. *v.* Musser-Sauntry Co. (168 U. S., 607); Spencer *v.* McDougal (159 U. S., 62); U. S. *v.* Payne (8 Fed. Rep., 883); U. S. *v.* Tichenor (12 Fed. Rep., 415); No. Lumber Co. *v.* O'Brien (139 Fed. Rep., 614); Russian Packing Co. *v.* U. S. (39 Ct. Cls., 460); U. S. *v.* Blendauer (122 Fed. Rep., 703); Florida Town Imp. Co. *v.* Bigalsky (33 So. Rep., 450); O'Connor *v.* Gertgens (89 N. W., 866); Hewitt *v.* Schultz (76 N. W., 230).

The Secretary of the Interior as the representative of the Executive in the care of the public lands and their resources often needs to take steps neither prohibited nor specifically provided for by law to prevent some great harm or to gain some great good for all the people. However, withdrawals of and protective measures for public land, if made or taken, will be for one purpose only, namely, conservation of the public lands and their resources for their highest uses in the interests of the people. It would be a grave dereliction of duty if the Executive failed to act promptly in preventing public injury by the misuse of the public domain and its resources.

PROTECTION OF PUBLIC LANDS.

There have been collected for timber trespasses without suit $67,902.39, and there have been recovered through suits against trespassers $30,785.92, while one timber trespass suit recently investigated has led to negotiations for a settlement which will probably bring the Government $150,000. Two hundred and fifty-four cases of unlawful inclosure, involving 1,323,050 acres, have been reported. The inclosures have been removed from 762,941 acres. The record of criminal proceedings of all kinds from June 30, 1907, to June 30, 1908, is as follows:

Criminal proceedings for protection of public lands during year ended June 30, 1908.

	Indictments.	Convictions.	Acquittals.
Timber trespass	16	8	14
Perjury	34	8	7
Subornation of perjury	4	0	0
Conspiracy	95	6	28
Forgery	4	0	0
Securing false affidavits	8	3	2
Boxing trees	5	7	0
Unlawful inclosure	64	31	5
Forest fires	2	0	2
Misappropriations, funds of United States	2	0	2
Total	234	63	60

From June 30, 1908, there have been 54 new indictments, with 35 convictions, fines amounting to $36,607.94, and prison sentences amounting to a total of nine years and nine months.

COAL LANDS.

The Geological Survey has continued the examination of coal lands in accordance with the plan reported last year. The restorations and classifications completed up to date appear in the following table:

Status of classification and restoration of coal lands.[a]

State.	Area restored prior to January 1, 1908.[b]	Area classified after January 1, 1908.		Total area classified or restored.	Approximate area of original withdrawals remaining to be classified.
		Coal.	Noncoal.		
	Acres.	*Acres.*	*Acres.*	*Acres.*	*Acres.*
Colorado	8,811,400	1,273,744	1,825,776	11,910,920	2,812,800
Montana	11,393,660	192,900	1,871,740	13,458,300	3,156,480
New Mexico	7,410,920	1,120,600	794,840	9,326,360	2,027,520
North Dakota	2,684,160			2,684,160	299,520
Oregon	552,960			552,960	384,000
Utah	5,201,880			5,201,880	668,160
Washington	668,160			668,160	299,140
Wyoming	16,590,052	2,421,800	2,077,400	21,089,252	4,020,480
Total	53,313,192	5,009,044	6,569,756	[c] 64,891,992	[d] 13,668,100

[a] The total area originally withdrawn was 67,134,640. Of this amount 66,938,800 acres were withdrawn by various departmental orders between July 26, 1906, and December 13, 1907, and 195,840 acres were, without withdrawal, classified as coal lands from information obtained in the field.

[b] These figures include 24,599,532 acres of land actually classified by geologic work and 28,713,660 acres of land which were found to contain no coal or the coal was of such low grade as to be worth only the minimum price fixed by law.

[c] This area is now subject to entry under the public-land laws.

[d] As a result of geologic field examination additional coal acreage is being discovered and classified each year. Of the 24,599,532 acres of land actually classified, about 11,425,452 acres had not been withdrawn from entry.

During the last year there have been taken up under the coal-land laws 44,821.12 acres at the total purchase price of $636,663.18.

Many difficulties still arise under the existing coal law. Another year's operation under the law shows still more convincingly the need of its radical amendment. It is most earnestly to be hoped that Congress at this session will consider favorably the pending measure, which has for its purpose the segregating of the coal from the surface and the sale or lease of the coal in such quantities as will permit its development in accordance with the needs of the country, and in great measure prevent private interests from either monopolizing or holding for speculative purposes the great fuel deposits remaining in the public domain.

The pending bill provides for alternative methods of sale and lease, so that the system best adapted to any special section of the country may be used.

I am still of the opinion that the leasing system will afford the best method for protecting, conserving, and developing the coal fields in accordance with the needs of the community. When once the surface can be used for the purposes to which it is best adapted there will be no retarding of the development of that surface by withholding the disposition of the coal until such time as it can be profitably and wisely mined.

ALASKA COAL LANDS.

According to data collected by the Geological Survey, the coals of Alaska are divided into four classes—anthracite, semibituminous, bituminous, and lignite—and are widely distributed. The area of known workable coal is 792,320 acres, and the area containing coal-bearing rock 8,092,160 acres.

November 12, 1906, all coal lands in Alaska not theretofore located, filed upon, or entered were withdrawn pending consideration by Congress of their conservation and future disposition. Since the coal-mining laws were made applicable to Alaska, June 6, 1900, a total of 47 coal entries have been made, embracing approximately 7,520 acres, and 90 applications to enter have been received, embracing 14,400 acres. The exact number of locations made prior to November 12, 1906, and for which applications have not been received, can not be stated at this time.

The act of May 28, 1908, which permitted locators of coal lands in Alaska to consolidate their claims so as to include in a single purchase not exceeding 2,560 acres of lands, was given publicity and a circular of instructions issued, but up to the present time no applications to enter consolidated claims under its provisions have been filed, though numerous communications received indicate an interest in the provisions of the law. Since the date of this act 14 coal entries have been made in Alaska under the provisions of the general coal-land laws.

FENCING.

I again call attention to the law prohibiting the inclosure of the public domain or the placing of obstructions thereon. Many miles of fence and many obstructions have been removed, and many hundreds of thousands of acres of land have been thus restored to the public domain; but the enforcement of the existing law does not meet the need of the present time. The law should be so amended as to regulate the use of the public range in such manner as will be equitable to the stockmen in each locality. Such a system means the preservation and improvement of what is left of the great ranges. It would not prevent their ultimate agricultural development, as a settler

should be given the right of homestead entry and a preference to use such portion of the range as may be necessary to graze his stock.

TIMBER AND STONE.

As the timber and stone act has not been repealed, I have, under the following provision of that act, provided for the classification of timber and stone lands. Section 1 reads as follows:

That surveyed public lands of the United States within the States of California, Oregon, and Nevada, and in Washington Territory, not included within military, Indian, or other reservations of the United States, valuable chiefly for timber, but unfit for cultivation, and which have not been offered at public sale according to law, may be sold to citizens of the United States or persons who have declared their intention to become such, in quantities not exceeding one hundred and sixty acres, to any one person or association of persons, at the minimum price of two dollars and fifty cents per acre; and lands valuable chiefly for stone may be sold on the same terms as timber lands: *Provided*, That nothing herein contained shall defeat or impair any bona-fide claim under any law of the United States, or authorize the sale of any mining claim, or the improvements of any bona-fide settler, or lands containing gold, silver, cinnabar, copper, or coal, or lands selected by the said States under any law of the United States donating lands for internal improvements, education, or other purposes: *And provided further*, That none of the rights conferred by the act approved July twenty-sixth, eighteen hundred and sixty-six, entitled "An act granting the right of way to ditch and canal owners over the public lands, and for other purposes," shall be abrogated by this act; and all patents granted shall be subject to any vested and accrued water rights, or rights to ditches and reservoirs used in connection with such water rights, as may have been acquired under and by the provisions of said act; and such rights shall be expressly reserved in any patent issued under this act.

This section provides that timber and stone lands may be sold "at the minimum price of two dollars and fifty cents per acre." These lands have heretofore been sold at a flat rate of $2.50 per acre. I interpret this language to be equivalent to "not less than two dollars and fifty cents per acre." Under the new regulations such lands will be appraised and sold at the appraised value, but in no instance will the price of such lands be less than $2.50 per acre. These regulations do not apply to timber and stone applications pending at the time of the adoption of the regulations.

RIGHTS OF WAY.

In June and July, 1908, I had made field investigations of all rights of way for reservoirs, ditches, canals, pipe lines, telephone and telegraph lines, electric transmission lines and tramroads, which had been granted up to that time under the provisions of the acts of March 3, 1891 (26 Stat., 1095), May 11, 1898 (30 Stat., 404), February 15, 1901 (31 Stat., 790), January 21, 1895 (28 Stat., 635), and February 1, 1905 (33 Stat., 628), for irrigation, power, and other

purposes. Up to the present time 242 reports have been received from the special agents who made the examinations, of which 152 are favorable to the applicants, they having constructed the works and are using the rights of way in accordance with law. Ninety reports are unfavorable, and recommendations are made that steps be taken to revoke the grants because of the nonconstruction of the works or the abandonment after partial construction, or the use of the right of way for purposes other than those allowed by the acts under which the rights of way were granted. In 20 of these 90 cases no action can be taken at this time because the five years from the date of the approval of the application allowed the applicant within which to construct the works have not expired, and no action is necessary, as some of the applicants have transferred their rights to others who have later obtained a right of way for the same site. Action has been taken on 16 of the 90 cases by this office by allowing the applicants 60 days to show cause why steps should not be taken to have the rights of way declared forfeited. One response has so far been made. The other 54 cases reported upon adversely will receive action by this office at the earliest practicable moment.

The right-of-way laws are neither equitable, certain, nor just. Some of these laws give everything to the grantee without protecting the people's interests. Others fail absolutely to give the grantees that business security which must be the foundation for great development. Another class is so uncertain in wording that it can not be administered without friction. All right-of-way laws should be codified and revised so that they will be just, reasonable, and certain. The grantees should have security against revocation, except because of nonuse or misuse, and a sufficient period of enjoyment, so that they can afford to spend the necessary money for development. The people's interests should be protected by provision for the return of the grant to their control at some reasonable time in the future, in order that it may be disposed of again according to the demands of the public welfare at that time. The best public interest also demands that the right-of-way laws provide a definite and speedy procedure for the revocation of rights of way because of willful and continued nonuse or misuse.

DESERT LAND AND DRY FARMING.

The development of dry farming and the extension of irrigated areas has brought under cultivation many thousands of acres of the public domain that hitherto were considered practically worthless. It is therefore necessary to very carefully consider how the remaining portions of the public domain should be used. I think it clear that the remaining lands should be classified in accordance with the general plan outlined in the report of the Commissioner of the General

Land Office. Under such a classification the Government could readily provide means for the disposition of these lands in such manner as to afford to the homemaker the opportunity to acquire the necessary kind and quantity of land. The homestead law is not applicable to much of the balance of the public domain. If the land is irrigated a much smaller amount than 160 acres may be required. If it be a dry-farming section, more than 160 acres may be required. It is probable in certain sections, where dry farming is feasible, that residence upon the land itself will not be possible because of the absence of potable water. It may thus be necessary and wise to permit the cultivators of such areas to live in communities some miles distant from the farms and base final proof upon cultivation and actual residence in the neighborhood. In other words, it is unwise to attempt to apply to these areas now under consideration the laws that were applicable to a totally different kind of lands.

Another great advantage of such a classification would be the possibility of classifying grazing areas in accordance with the conditions and needs of special communities.

INDIAN OFFICE.

The Commissioner of Indian Affairs followed his usual custom and spent a large portion of the summer in a personal examination of conditions in the field. This work of personal investigation, especially in agencies far removed from ordinary routes of travel, has been of immense benefit in handling the many difficult Indian problems.

The Indian Office and its field service have been radically reorganized in accordance with the general plan of departmental and bureau reorganization. There has been a gradual extension of the cooperative method of work with the General Land Office and the Reclamation Service in this department, and with the Forest Service, the Bureau of Plant Industry, and the Bureau of Animal Industry in the Department of Agriculture.

The work of opening reservations in accordance with acts of Congress has steadily proceeded. While there have been delays in some places, the general work has been carried on with such speed as is consistent with the determination of the rights of the Indians.

The present great problem with the Indians is education. I indorse most heartily the recommendation of Commissioner Leupp regarding the discontinuance of certain nonreservation schools, and the establishment in their places of schools on the reservations where children can live in their customary surroundings and be taught those things which will make it possible for them to earn an honest living upon their own land.

The employment of Indians has proved successful. Many hundreds have been employed upon railways and the irrigation works being constructed by the Government. No single idea is more important for the Indian to learn than that of the necessity of work. As long as he is a mere dependent it is difficult, if not impossible, to make him appreciate the need of individual effort, but until he does appreciate this need he can not perform the duties of citizenship which are placed upon him as soon as he is allotted his land.

Patents in fee are being given to Indians whenever in individual cases it is shown that the Indian is capable of caring for his own property. These patents will not be issued, except after such investigation by the local agent as will give the department all necessary information upon which to determine the competency or incompetency of the individual. The degree of competency is not placed too high, but it must be sufficient to justify the department in believing that the Indian will be able to so manage his own property as to avoid being swindled in disposing of it and thus becoming a public charge. Every competent Indian should receive his patent in fee and assume the full obligations of citizenship, and the department endeavors to prevent any competent Indian from shirking this responsibility.

The irrigation work upon various reservations is proceeding satisfactorily so far as the work itself is concerned, but there is, and necessarily will be, great difficulty in teaching the Indian agriculture upon the irrigated areas. In most cases he is not accustomed to individual ownership of land. He dislikes confinement to a small farm, and finds both irksome and unintelligible a system of agriculture which compels him to intensively cultivate 10, 20, or 40 acres.

The local schools which are teaching the ordinary rudiments of agriculture will be far more helpful to Indians living upon irrigated lands than the higher education received in the present nonreservation schools.

The conditions on the different reservations are, on the whole, exceedingly good. There has been vigorous enforcement of the laws against the introduction and use of liquor; careful study has been made of sanitary conditions, and special efforts are being made to provide homes and schoolhouses that will prevent the spread of tuberculosis. The method of inspection has made it possible to readily and thoroughly examine all complaints. There have been no outbreaks, and the Utes who left their reservation in Utah have voluntarily returned to their own reservation. The questions that arose in the Kickapoo tribe between those who had gone to Mexico and those who remained in New Mexico were fortunately amicably settled, and the division of the fund appropriated by Congress for the tribe was agreed to at a council of all the Indians, held in New

Mexico. The only remaining difficulty with the Kickapoo question is that of clearing the titles of many of the allotments, which have been clouded by the action of certain white men who have endeavored to acquire, contrary to law, many of these allotments. Actions have been brought in Oklahoma to clear these titles, and the rights and the properties of the Indians will be safeguarded as far as the law permits.

FIVE CIVILIZED TRIBES.

LANDS.

The work accomplished in the old Indian Territory, now a portion of the State of Oklahoma, during the last fiscal year is shown very largely in the printed reports of the Commissioner to the Five Civilized Tribes; the United States Indian agent, Union Agency; superintendent of schools; supervisor of schools of the Creek and Seminole nations; supervisor of schools of the Choctaw Nation; supervisor of schools of the Cherokee Nation; supervisor of schools of the Chickasaw Nation; and supervisor of mines on the segregated coal lands. The report of the Commissioner of Indian Affairs also gives a brief synopsis of much of the work accomplished during the year.

In my report last year I called attention to the fact that by the advent of statehood many questions of law and policy had arisen, and I also call attention to some of the problems presented. During the last fiscal year and up to the present time many and varied have been such questions affecting the property of the Five Civilized Tribes, as well as the problems of the proper policy and plans to be instituted and carried out in order that the acts of Congress affecting the status of the members of these tribes, as well as their property, might be properly enforced.

Since my last report the most radical change in the status of much of the property of the Indians of the Five Civilized Tribes was brought about by an act of Congress approved May 27, 1908, entitled "An act for the removal of restrictions from part of the lands of allottees of the Five Civilized Tribes, and for other purposes," commonly known as the "restriction bill." The first section of the bill relates to the removal of restriction on the alienation of lands allotted to members of the Five Civilized Tribes in Oklahoma, and removes the restrictions on all lands allotted to intermarried whites, freedmen, and mixed-blood Indians having less than one-half Indian blood, including minors. It also removes the restrictions on all lands allotted to members of said tribes of mixed Indian blood having one-half or more Indian blood and less than three-fourths Indian blood, except their homesteads.

Restrictions on the alienation of homesteads of allottees enrolled as mixed bloods, having one-half or more Indian blood, including minors, are not removed, nor on any of the lands allotted to those enrolled as of three-fourths or more Indian blood, including minors, and these lands are not subject to sale, power of attorney, or other incumbrance, prior to April 26, 1931, except that the Secretary of the Interior may remove the restrictions from any such lands wholly or in part.

The classes from which restrictions are removed are shown in the following table, as well as approximately the number of allottees and number of acres of land affected:

Classes from which restrictions have been removed.

	Number of allottees.	Number of acres.
Choctaws and Chickasaws:		
Less than one-half Indian blood	11,048	3,535,360
One-half and less than three-fourths (except homesteads)	2,690	430,400
Intermarried whites	2,220	355,200
Freedmen	10,664	426,560
Total	26,622	4,747,520
Cherokees:		
Less than one-half Indian blood	24,809	2,728,990
One-half and less than three-fourths (except homesteads)	3,248	227,360
Intermarried whites	286	11,440
Freedmen	4,925	197,000
Total	33,268	3,164,790
Creeks:		
Less than one-half Indian blood	3,048	121,920
One-half and less than three-fourths (except homesteads)		
Intermarried whites		
Freedmen	6,807	272,280
Total	9,855	394,200
Seminoles:		
Less than one-half Indian blood	242	29,040
One-half and less than three-fourths (except homesteads)	165	19,800
Intermarried whites		
Freedmen	968	39,440
Total	1,375	88,280
Total:		
Less than one-half Indian blood	39,147	6,415,310
One-half and less than three-fourths (except homesteads)	6,103	677,560
Intermarried whites	2,506	366,640
Freedmen	23,364	935,280
Grand total under this law	71,120	8,394,790

Up to the time the bill was passed restrictions had been removed heretofore by the Secretary of the Interior on the alienation of 838,200 acres.

By the act of April 21, 1904 (33 Stat. L., 189), the restrictions were removed on the alienation of lands allotted to intermarried whites and freedmen, except homesteads, and except Choctaw and Chickasaw freedmen. Under the law as it existed at the time the bill was passed the allotments of Choctaw and Chickasaw freedmen were homesteads, and consequently the act of April 21, 1904, did not apply to them.

The restrictions on the alienation of all the lands allotted to members of the Creek Nation, except a 40-acre homestead in each instance, and except full bloods, were removed by operation of law on August 7, 1907, as the five-year limitation within which the lands could be alienated expired on that date. There are no intermarried whites on the rolls in either the Creek or Seminole Nation.

In the old Indian Territory there are about 19,600,000 acres, and under the act of May 27, 1908, there was relieved from restriction an excess of 8,394,790 acres. This, together with land rendered alienable under former legislation, makes a total of approximately 11,000,000 acres from which the restrictions have now been removed. Restrictions have been retained upon all lands of three-fourths or more and full-blood Indians and the homesteads of all persons who have one-half or more of Indian blood, it being recognized that such persons were still entitled to the protection which such restriction affords.

It is a wise policy, with proper safeguards, to require the wards of the Government who have been made citizens to assume as soon as they properly can the full obligation of citizenship. There are in the Five Civilized Tribes 30,244 citizens of three-fourths or more Indian blood and 6,829 of one-half to three-fourths Indian blood. All lands allotted to those of the first class and that allotted to the second class as homesteads remain inalienable except where the restrictions have been removed in accordance with the provisions of previous acts of Congress. There remain inalienable approximately 6,000,000 acres of allotted lands in the Five Civilized Tribes. Of the unallotted lands which are not subject to sale, there are in round numbers about 2,100,000 acres.

Under section 1, however, of the act of May 27, 1908, certain restricted lands may be subject to alienation under such rules and regulations as the Secretary of the Interior may prescribe. The rights of minors with regard to their restricted lands are safeguarded by a provision in said act authorizing the Secretary of the Interior, under rules and regulations to be prescribed by him, to appoint such local representatives within the State of Oklahoma as he may deem necessary; to inquire into and investigate the conduct of guardians or curators having in charge the estates of such minors, etc. There is also a provision that no restricted lands of living minors shall be sold

or encumbered, except by leases authorized by law by order of the court or otherwise.

Appropriations of $90,000 and $50,000 were made to enable the Secretary of the Interior and the Department of Justice to carry out the provisions of the law referred to and protect the rights of the Indians and the freedmen, without cost to them, in the disposition of their lands and to set aside any illegal transfers attempted before the removal of restrictions. Immediately after the passage of said act I directed the Assistant Secretary of the Interior, the Assistant Attorney-General for the Interior Department, and a representative from the office of the Commissioner of Indian Affairs to go among the Five Civilized Tribes in order to more fully acquaint the department with the conditions there, preparatory to the preparing of such rules and regulations as might be necessary in order to carry out the provisions of the act referred to.

After such investigation a set of rules and regulations, under date of June 20, 1908, governing appointees made by me under said act, and the leasing of restricted lands, as well as the removal of restrictions, was promulgated. For convenience in administering said law, the old Indian Territory, which consists of 44 counties, was divided into 15 districts, and I appointed district agents for each district, and provided offices for them within their respective districts, and required that the offices should be kept open from 8.30 a. m. to 5 p. m. each day, Sundays and legal holidays excepted, and all counsel and advice desired by allottees concerning deeds, leases, and other instruments are furnished by such agents. Each district agent gives his entire time to his official duties. The agents are also directed to visit different localities for the purpose of procuring information and making necessary investigations as the law provides and as he is directed. They also are required to examine the records of each county within their respective districts at least once each month, for the purpose of ascertaining the nature of transactions involving all lands and estates of all minor allottees, and also of restricted lands of adults. These agents report at the end of each month the work performed during such period. Special reports are made concerning any apparently illegal transaction involving the estates of allotments or allottees. Adult members of the Five Civilized Tribes, whose allotments can not be sold or encumbered, except after removal of restrictions therefrom by the Secretary of the Interior as directed in said law, and who desire to have their restrictions removed from all or part of such allotments, are required to apply to the United States Indian agent, Union Agency, through the district agent of the district in which the applicant resides, the application to be made on forms which have been prescribed and which are furnished on application to the party desiring such restrictions removed.

The classes of restricted lands to which the provisions of law and the regulations promulgated apply are as follows: Homesteads of adult mixed-blood allottees having half or more than half and less than three-fourths Indian blood; all allotted lands of the adult mixed blood of three-fourths or more Indian blood; all allotted lands of adult full-blood allottees.

When an application is made full investigation, including a personal interview with the applicant, is required. If from this investigation the Secretary of the Interior finds that any applicant for the removal of restrictions should have the unrestricted control of his allotments, the restrictions, wholly or in part, without conditions, are removed. When, however, it is found to be for the best interest of any applicant that all or part of his restricted lands should be sold with conditions concerning terms of sale and disposal of proceeds, the restrictions are removed and become effective only with the execution of the deed by said applicant to the purchaser. Before said deed is executed the designated tract or tracts of land is to be sold upon such terms as may be in each case specifically directed. As to the manner of conducting said sales and the disposition of the proceeds derived therefrom, attention is invited to the rules and regulations heretofore referred to.

It is gratifying to note that the representatives appointed by me were gladly received by most all classes of citizens. The Indians were particularly anxious to learn about the new laws, frequently asking them to address meetings, which were largely attended by the full-blood element.

A great deal of attention has been given to certain recalcitrant Indians of the Creek and Cherokee tribes, those of the Creek Nation being known as the " Crazy Snake " faction and those of the Cherokee Nation being known as the " Night Hawk " element. As evidence of the good work that is being done in the various districts and of the esteem and gratitude which the Indians have for the influence of the department in securing the law which brought about the appointment of the district agents, the Creek and Choctaw councils have expressed their feelings in resolutions commending the work of the department and asking for a continuance of the system for next year.

The department notes with a great deal of pleasure that most of the probate judges having charge of the minors' estates within the districts have not only expressed their entire willingness to cooperate in every way with the department and the district agents for the mutual benefit of the Indian citizens, but are cooperating and calling upon the agents in the various districts to assist them relative to the proper handling of minors' estates. A kindly feeling exists between most of the district agents and county judges, and many of the judges

have by word and letter expressed their appreciation of the assistance given them by these departmental officials, and a very great reform is being accomplished in the manner in which curators' and guardianship matters are being handled. In the Choctaw and Chickasaw nations, especially, a class of so-called "professional guardians" have been very prodigal of all the estates intrusted to them, as will appear from some of the reports of the agents. The estates of minors for whom they are guardians have been found to be in a most deplorable condition. As an example of the manner in which these curators have conducted the estates of their wards, attention is called to the following extract compiled from the reports of 18 estates of minor citizens of the Choctaw and Chickasaw nations. The total amount received as rentals and income on these estates during the last year was reported by the curator as $1,378.28, and the disbursements were as follows:

Schooling	$10.00
Maintenance	286.20
Interest on two previous annual reports passed on by the United States court	160.76
Amount due curators	1,458.06

These 18 cases were not culled out because they were particularly bad, but were taken from the probate dockets at random and may therefore be considered as a fair sample of the manner in which many of the estates had been handled by this class of guardians. It will be noticed that the indebtedness exceeds the income, in spite of the fact that each of these minors have received 320 acres of average allotable land in the Choctaw Nation.

The saving made to individual Indians in assisting the court relative to the guardianship matters, in seeing to it that proper consideration is paid when inherited lands are sold, and assisting the Indians in the matter of leasing contracts on unrestricted lands or tracts not requiring the approval of the department, has been enormous. It has been estimated that during the time these district agents have been assisting in this work there has been saved to the Five Civilized Tribes some $400,000. The result of this work has inspired a spirit of confidence and the Indians do not hesitate to call upon these agents for advice. The faith placed in them produced many good results. Among them, and perhaps of the most importance, are that it assists the Indian in his business transactions and teaches him that he must be careful in such matters, and it also relieves the various offices of the department of a great deal of correspondence which would accomplish but very little, it having been found by experience to be impossible to advise many Indians by letter and have them follow instructions.

More than 2,000 applications for the removal of restrictions have been filed since July 27, 1908. Each of these requires careful investigation at the hands of the district agent, and it has been the plan to have the district agents become personally acquainted with the applicant and to find out his needs and necessities. In almost every instance the agent recommends that if restrictions are removed and the land sold that it be sold under the supervision of the department. The proceeds of such sales are delivered to the allottees for the making of necessary improvements or for the purchase of such supplies as may be needed for the support and comfort of the family. Thus by careful counseling and advising those making application and assisting them in the wise expenditure of their moneys for improvements, it is believed that these agents will develop into potent educational factors and redound to the great benefit of these Indians.

There are approximately 30,000 Indians of the Five Civilized Tribes who still have restricted lands, and about 15,000 minors and other classes that properly come within the jurisdiction of the district agent. Most of these minor citizens reside in 44 counties of the State of Oklahoma and are under the jurisdiction of the county courts. With but few exceptions the relations with the various county judges with whom the various offices of the department have been associated have been most cordial and most all voiced the sentiment that this work as yet is only in its infancy, and expressed confidence that the assistance of these representatives of the department is and will be absolutely necessary to aid and supplement the work of the probate courts.

In my last report I called attention to the fact that under the laws the transfer of land by the Indian whose restrictions had not been removed was positively prohibited, but there were persons who were taking deeds and only paying a very small fraction of the real value to the Indians. During the past summer investigations have been made relative to these transactions and as a result suits have been brought or directed involving more than 23,000 tracts of land covered by illegal instruments of conveyance. In a large number of cases the lands obtained by these illegal instruments and deeds have been reconveyed to the Indians from whom they were received.

Attention is again called to the fact that in the Creek Nation many suits are still pending to set aside a large number of deeds for town lots. Since the bringing of these suits settlement has been made for $10,000 for the land on which Kendall College is now situated. Other offers of settlement are now under consideration.

In relation to insane persons not Indians, the contract entered into with St. Vincent's Institution for the Insane, in St. Louis County, Mo., expired on June 30, 1908, at which time the patients, 80 in number, were turned over to the state authorities of Oklahoma.

OSAGE RESERVATION.

The commission allotting the lands of the Osage Reservation is still engaged in this work. On April 28, 1908, the tribal roll, which contains the names of 2,230 persons, of whom all but one are entitled to allotments, was approved.

SCHOOLS.

The report of the superintendent of schools, as well as the various supervisors under him, is published in connection with the annual report of the Commissioner to the Five Civilized Tribes, and shows very satisfactory progress made and results obtained during the year. Data relating to the schools are given also in the report of the Commissioner of Indian Affairs.

It appears that the Indians are manifesting a more lively interest than ever before in the education of their children. The boarding schools are all crowded. Since tribal relations are broken up, and the Indian being thrown very largely upon his own resources, the need of individual education and training has become more and more apparent. The full-blood Indians when associated with white children in schools easily become discouraged in their work. They are naturally bashful, timid, and diffident, especially in the presence of white persons. For these reasons, among others, the Government should hereafter give special attention to the education of the full-blood. During the year ending June 30, 1908, there were maintained 45 more day schools from tribal funds, 379 more day schools from the congressional appropriation, and 2 more day schools from surplus court fees than were maintained during the fiscal year ending June 30, 1907. There were also enrolled 12,074 more pupils during the year 1908 than during the previous fiscal year. The former Indian Territory, since statehood, has been divided into school districts, and those districts having a reasonable amount of taxable property are preparing to build schoolhouses by issuing bonds. These districts, however, will have very little money for conducting schools until the amount of their taxable property can be determined and taxes levied and collected for school purposes.

The department has been cooperating with the state authorities concerning the management of the schools for the present year, and the agreement approved by me relative to such cooperation received the unanimous indorsement of the legislature of the State of Oklahoma. A copy of the agreement will be found in the report of the superintendent of schools and the annual report of the Commissioner of Indian Affairs.

Those districts having sufficient taxable property to bear the expense of their own schools should do so, but many districts, especially

those having a large Indian population, have at the present time comparatively little taxable property, and therefore will be able to raise but a very small amount of money by taxation. These distinctly Indian neighborhoods should, in my opinion, receive special aid and encouragement from the Government. The Indian boys and girls, being all owners of land, and a very large majority of the white boys being farmers, there has been an endeavor to give some special attention to the teaching of practical agriculture.

The instructions which the teachers receive at the summer normals have enabled them to accomplish some good results, as is found in the fact that some of the Indian boys are becoming interested in the study of soils, and are awakening to a realization of the fact that the land possesses many good qualities of genuine worth. One thousand two hundred teachers attended the summer normals that were conducted during the month of June. These normals were all conducted in strict accordance with the laws of Oklahoma, and teachers passing the examination at the close of the normal were given certificates by the state and by the federal school officials.

With relation to the future of the schools it is difficult to make any definite recommendation, for the reason that instead of building up a system of schools it is realized that they must be gradually abolished, as far as any Government supervision over them is concerned. In the natural course of events a state school system will supplant the one in operation at the present time. The act of Congress now in force provides that the Secretary of the Interior shall have the right to continue the tribal schools until a State is formed and ready to take charge of the education of the children. The state schools must be sustained by local taxation, but inasmuch as most of the lands of full-blood Indians are not subject to taxation, it will be impossible for the State to provide proper educational facilities for the full-blood children for some time to come. The full bloods should therefore receive special attention in the future, to the end that they may be prepared to understand and appreciate their rights and duties as citizens, and be prepared to properly manage and conserve their property interests.

In addition to 1,421 day schools provided for during the past year, there were 35 boarding schools maintained. The attendance at the Indian boarding schools during the year just closed has been the best in their history. It is claimed that an Indian child puts forth greater effort in the boarding schools than in the mixed day schools, for the reason that he does not feel the embarrassment among his own people that he feels among the whites, and a very large percentage of the attendants at the day schools are white children. Statistics of enrollment, average attendance, months of school, amount paid teachers, amount paid for supplies, etc., of the various schools will

be found in a table submitted by the superintendent of schools and printed in connection with his annual report and the annual report of the Commissioner of Indian Affairs. The instructions given by the department to the persons managing the day schools were to the effect that these schools should be conducted, as far as possible, in the interest of full-blood children, and, other things being equal, they should receive preference in enrollment.

COAL LANDS.

The printed reports of the Commissioner to the Five Civilized Tribes, United States Indian agent, Union Agency, supervisor of mines and mining, and trustees of the Choctaw and Chickasaw nations for the year ending June 30, 1908, are referred to for a detailed statement showing the status of the coal and asphalt lands within the old Indian Territory.

There has been very little change in the condition of the segregated coal lands belonging to the Choctaw and Chickasaw nations since my last report. Three new mines have been opened during the year, making the present number of openings on said lands 94. The number of accidents has decreased. The ventilation of the mines has been in compliance with the law, except in a few instances, which cases were remedied when the matter was brought to the attention of the operators. The total value of coal produced during the year ending June 30, 1908, was $5,815,700.98, representing 2,780,649 tons, the average selling price being $2.09 per ton. The production of coke during the year was 7,368 tons, the average selling price being $4.51 per ton.

One lease, covering 960 acres, was canceled by the department during the year. One thousand five hundred and eight tons of asphalt was mined during the year. The royalty received during the fiscal year ending June 30, 1908, on coal was $270,351.62; on asphalt $2,845.20. Five assignments of leases have been approved during the year.

In my last report I referred to the investigations being made of the 338,352 acres of unleased coal lands to determine the locality and character of the underlying coal. Since November, 1907, two drilling outfits have been in operation under the supervision of the supervisor of mines and a representative of the Geological Survey, and to June 30, 1908, 20 holes of depths ranging from 175 to 1,500 feet have been drilled on the land to ascertain the depth, thickness, and quality of coal veins, and a complete record of all drilling is being preserved.

I recommended last year that a law be passed authorizing the sale of the surface of said lands, giving my reasons therefor. Since that time nothing has come before the department that would justify any change in my views relative to the opinion expressed therein. I

also suggested in my last report how the coal might be handled or leased, etc. I therefore renew my recommendations made in said report concerning the same.

TIMBER LANDS.

There has been practically no change in the status of the timber lands belonging to the Indians since my last report, and I have had no sufficient reason presented to me that would justify any change in my views relative to the recommendation made in said report concerning the 2,000,000 acres in the southeastern part of the old Indian Territory.

The policy expressed in my last report relative to said timbered land has been continued. I therefore renew my recommendation concerning the same as expressed in last year's report that this area be purchased from the Indians and be reserved as a national forest.

OIL.

In my report for the fiscal year ending June 30, 1907, I called attention to the remarkable increase in the production of oil in the Territory and to the fact that it had been impossible for transportation companies to remove it as fast as produced. Two large trunk lines, built by the Gulf and Texas companies from the Glen Pool to the Gulf of Mexico, were completed during the year, and other small additional lines. The work in connection with oil leases at the close of the fiscal year was in splendid condition, there being but 549 leases pending in the office of the United States Indian agent, Union Agency, and 516 pending in the office of the Commissioner of Indian Affairs and the Secretary's office, as against 5,009 at the close of the previous year.

During the year there was submitted to the department for consideration a total of 7,597 leases. Up to June 30, 1908, there has been filed a total of 17,727 mineral leases, almost entirely oil leases. Of those considered by the department 10,525 had been approved, some of which have since been canceled, and 6,137 disapproved. Statements showing in detail the work during the fiscal year and the status of oil leases are embodied in the report of the United States Indian agent, Union Agency, which is printed with the report of the Commissioner to the Five Civilized Tribes, and the report of the Commissioner of Indian Affairs.

On April 20, 1908, the department modified its rules, regulations, and forms to a considerable extent, making the minimum rate of royalty 12½ per cent for oil instead of 10 per cent, and the terms of leases of adult citizens to be five years, and so long thereafter as oil, gas, or other mineral may be found in paying quantities, and also provided that by proper stipulation the 10 per cent leases on earlier

forms might be changed to conform to the new regulations by increasing the royalty. Also provision was made for the assignment of leases providing how they might come within the regulations of April 20, 1908, upon a showing of the assignee company similar to the one it would be required to make if it were an original lessee.

There was marketed during the fiscal year ending June 30, 1908, 41,101,000 barrels of oil; the royalty collected by the United States Indian agent during the year on account of oil and gas was $1,692,627.55. The oil and gas operations on the Osage Reservation were conducted under leases covering 680,000 acres. Under provisions of the existing agreement with the Osage Indians all mineral is reserved to the tribe for a period of twenty-five years; therefore all royalties and proceeds arising from oil and gas operations are placed to the credit of the tribe. There were on June 30, 1908, 867 oil wells and 74 producing gas wells on said reservation. Of said gas wells 30 are utilized at a royalty of $100 per annum paid. The remaining gas wells are used for development of leases without payment of royalties or are shut in as not being available for commercial use.

There was produced and run during the fiscal year ending June 30, 1908, from the Osage Reservation 4,773,689.44 barrels of oil, one-eighth of which was credited to the Osage Nation as royalty, the proceeds amounting to $243,610.36. The royalty from gas wells aggregated $3,125.

It is estimated that on July 1, 1908, there were approximately 36,000,000 barrels of oil held in storage within the limits of the Creek and Cherokee nations.

There has been a very great change in the pipe-line conditions since the creation of the State of Oklahoma and the removal of restrictions from so many allotments.

The law under which pipe-line permits were granted authorized the giving of a permit for twenty years with a renewal for twenty more under conditions to be imposed by the Secretary of the Interior. As long as the whole Territory was under the control of the Interior Department these regulations and the conditions of the law could be readily enforced. Under the present conditions there is grave doubt as to whether effective regulations or control can be exercised.

The State of Oklahoma now controls the highways and can impose such conditions as its legislature sees fit upon the corporations or individuals who may operate and build lines. There is no conflict of authority between the Federal Government and the State on this subject, for the reason that the Federal Government, through the Interior Department, has to do only with the restricted Indian lands, and whatever permit or easement that it grants under the law can apply only to such lands.

I am now giving careful consideration to these conditions for the purpose of determining whether there should be any change in the regulations or in the policy of the department hitherto carried out. It is clear that the work of the department thus far, through its regulations upon leasing and upon the pipe lines, has been of direct benefit to the owners of all lands, both Indians and others, but it may be that the new conditions that have arisen will require some change in the method of dealing with the remaining restricted lands.

PENSIONS.

During the entire year ending June 30, 1908, the total number of pensioners on the roll was 1,006,053. At the close of the year there were on the roll 951,687 pensioners—658,071 soldiers and sailors, 293,106 widows and orphans, and 510 army nurses. The gains to the roll during the year were 37,609 new pensioners and 1,073 restorations and renewals, a total of 38,682. Of this number, 339 were pensioned by special acts of Congress. The losses to the roll during the same time were 50,676 by death and 3,690 from other causes, a total of 54,366. The net loss for the year, therefore, was 15,684.

The number of deaths of soldier and sailor pensioners of the civil war for the year was 34,333. The pensioners on the roll June 30, 1908, are classified as follows:

Pensioners on roll June 30, 1908.

Revolutionary war:	
Daughters	2
War of 1812:	
Widows	471
Indian wars:	
Survivors	1,820
Widows	3,018
War with Mexico:	
Survivors	2,932
Widows	6,914
Civil war:	
General law—	
Invalids	142,044
Widows	75,515
Minor children	541
Mothers	3,688
Fathers	656
Brothers, sisters, sons, and daughters	240
Helpless children	528
Act of June 27, 1890—	
Invalids	140,600
Widows	———
Minor children	3,954
Helpless children	295
Act of February 6, 1907	338,341
Act of April 19, 1908, widows	188,445
Army nurses	510

War with Spain:	
Invalids	20,548
Widows	1,145
Minor children	331
Mothers	3,096
Fathers	530
Brothers and sisters	7
Helpless children	2
Regular establishment:	
Invalids	11,786
Widows	2,580
Minor children	120
Mothers	871
Fathers	139
Brothers and sisters	5
Helpless children	7
Total	951,687

The cases referred to above under the head of "Regular establishment" embrace those in which the disability originated in service in the Army, Navy, or Marine Corps, between the close of the civil war and the commencement of the war with Spain, and since the close of the war with Spain and the insurrection in the Philippine Islands.

The last surviving widow of the Revolutionary war died November 11, 1906. The names of two daughters who are pensioned by special act of Congress are all that roll now contains.

The last pensioned soldier of the war of 1812 died May 13, 1905, but the roll contains the names of 471 widows of that war.

The act of February 6, 1907, grants pensions to persons who served ninety days or more in the army or navy during the civil war, or sixty days in the Mexican war, and were honorably discharged, as follows: $12 per month when 62 years of age; $15 per month when 70 years of age; and $20 per month when 75 years of age.

From the date of its approval to June 30, 1908, 431,113 applications were filed for pensions or increase of pensions under this act, and all but 16,909 of them had been disposed of.

By readjustment of the clerical force of the Pension Bureau, the tremendous increase caused by this act was taken care of in such a way that the work of the bureau is now, and for several months has been, current.

The benefits derived from the act of April 19, 1908, are that under the first section, widows, minor children under the age of 16 years, and helpless children, as defined by existing law, now on the roll, or who may thereafter be placed thereon, who are receiving a less rate, are advanced to $12 per month, and, under the second section, widows who were married prior to June 27, 1890, to persons who served ninety

days or more in the army or navy during the civil war and were honorably discharged are allowed $12 per month without regard to their pecuniary condition; in other words, they are not required to show dependence.

Under the first section the rate has already been increased without any expense or inconvenience to them whatever to 198,260 widows, 4,017 minors, and 300 helpless children; in all, 202,577; and under the second section 22,115 applications have been received.

Final action was taken during the year in 387,992 claims, of which 325,140 were approved for allowance, 59,449 for rejection, and 3,403 approved for allowance, but no certificates issued thereon because no benefits would accrue to applicants.

The number of claims pending July 1, 1907, was 356,181, and there were filed during the year 185,622 new applications of all kinds. At the close of the year 123,483 claims were pending.

The appropriation for the payment of pensions for the fiscal year was $145,000,000; deficiency appropriations and repayments to the appropriation made the amount available for pensions $155,003,390.71. The amount paid out for pensions was $153,093,086.27, and the amount expended for salaries and other operating expenses was $2,800,963.36, making a total expenditure of $155,894,049.63. While the amount expended for pensions was the largest since 1893, the operating expenses show a decrease of $2,066,771.06.

Since 1861 there have been granted by special acts of Congress 23,316 pensions and increase of pensions, of which 14,607 were on the rolls at the close of the fiscal year, with an annual value of $4,211,332, a little more than one-half of which amount is in excess of what could have been granted under the general laws.

The number of special acts granting pensions and increase of pensions passed during the first session of the Sixtieth Congress was 3,579. The increase in the annual expenditures resulting from these special acts was $535,368.

During the year 113 indictments were found and 101 convictions secured on account of violation of the pension laws. There were 8 acquittals, 30 cases were dismissed, 2 civil suits were instituted, and $7,698 was recovered. Of the persons convicted, only 10 are believed to have had any military or naval service.

APPEALS IN PENSION AND BOUNTY LAND CLAIMS.

Prior to January 1, 1881, no docket numbers were given or kept in relation to appeals in pension and bounty land claims. After January 1, 1881, such appeals were numbered and docketed consecutively during the year, commencing with docket No. 1 each successive year until January 1, 1889.

From January 1, 1881, to December 31, 1889, there were filed and docketed in this way 13,534 appeals. Beginning January 1, 1889, the number of appeals have been consecutively numbered and docketed, commencing with No. 1 to the present time, and on June 30, 1908, the last docket number of merit appeals was 124,414. Since January 1, 1889, a separate docket has been kept for fee appeals, commencing with docket No. 1 and numbered consecutively to the present time, and on June 30, 1908, the last docket number of fee appeals was 8,536. The fee appeals filed prior to January 1, 1889, were 279. Since June 5, 1905, there has been kept a separate docket of appeals in claims filed under the act of March 3, 1899 (division of pensions). The last docket number of this class of claims on appeal was, on June 30, 1908, 887.

The following table shows the number of appeals filed since serial docket numbers have been kept:

From January 1, 1881, to June 1, 1889, merit appeals	13,534
From January 1, 1881, to January 1, 1889, fee appeals	279
From January 1, 1889, to June 30, 1908, merit appeals	124,414
From January 1, 1889, to June 30, 1908, fee appeals	8,536
From June 5, 1905, to June 30, 1908, division of pension appeals	887
Total	147,650

Having ascertained that this enormous docket of appeals had not for many years been checked over and verified, I caused the same to be done and all cases brought forward where the docket showed that complete disposition had not been made of the same.

The following table shows the number of appeals and motions for reconsideration pending at the beginning of the fiscal year, July 1, 1907, those filed during the fiscal year ending June 30, 1908, their disposition, and the number pending July 1, 1908:

Pension appeals pending.

	Pending July 1, 1907.	Filed during year.	Total.	Disposed of.	Pending July 1, 1908.
Original merit appeals	720	6,050	6,770	6,270	500
Fee appeals	5	59	64	61	3
Motions for reconsideration	11	136	147	143	4
Total	736	6,245	6,981	6,474	507

Two hundred and twenty-two cases on appeal were, upon careful examination, returned to the bureau for further action and report. About one-half of these were returned at the request of the commissioner for further consideration and readjudication before making a final report on the pending appeal. Other cases were returned on review by the board for bureau action on new evidence filed, for test

medical examination or special examination, or for various reasons the claims were deemed improperly adjudicated. During the fiscal year 584 appeals and motions were dismissed. The Commissioner of Pensions reported in 340 cases of such dismissals that upon reconsideration the adverse action taken by the bureau had been receded from and that upon dismissal of the appeal the contention of the appellant would be allowed. The department after considering the appeal decided that the action proposed by the bureau was warranted under the law and the evidence, and the appeal was dismissed, and the papers were promptly returned to the bureau for final and favorable adjudication.

Other appeals were dismissed for the reason that they were filed by attorneys without proper authority, duplicates of former appeals not filed within the limit of time (one year from the date of the adverse action by the bureau), and in other respects altogether informal and in absolute disregard of the rules of practice.

Deducting the dismissals (584) and the cancellations (7 duplicates), final decisions were rendered in 5,883 cases, of which 394 were reversals. As compared with the preceding year, it is observed that there has been a reduction of the number of appeals filed. In the fiscal year ending June 30, 1907, there were filed 9,121 appeals and motions, while, as already stated, there were filed during the last fiscal year 6,245, a reduction of 2,876.

Since June 30, 1907, there has been quite a reduction in the working force of the board. In August, 1907, all of the members of the board of pension appeals known as temporary members (except one, since transferred) were transferred or detailed elsewhere, so that, by transfers and resignations, there has been a reduction of 12 members of the board; also 8 typewriters have been transferred elsewhere.

Unless the appeals are largely increased, it is expected that the present force will keep pace with the current work.

Volume 17 of departmental decisions in appealed pension and bounty land claims has been completed and received from the Public Printer. It embraces the most important decisions of a legal and medical character for future reference and guidance. As no digest of pension decisions has been published since 1897, there has been included in this volume the consolidated topical index to decisions found in volumes 9 to 17, inclusive.

PATENT OFFICE.

The volume of business in the Patent Office shows about the usual annual increase in all its branches. The number of applications received was as follows:

Patents	58,527
Design patents	1,091
Reissue patents	207

which makes a total of 59,825 applications for patents of all descriptions filed during the fiscal year, an increase over last year of 2,303. There were 7,467 applications for registration of trade-marks; 810 for labels, and 339 for prints, making a total of 8,616. This shows a decrease of 657. The total money receipts from all sources was $1,874,180.75; the expenditures $1,608,292.01, and the net surplus $265,888.74, which has been covered into the Treasury.

The grand total for all years of receipts from all sources over expenditures for salaries and all other expenses is $6,972,070.38 net. This large sum represents the net earnings of the bureau that have been turned into the Treasury from year to year and has been paid by the inventors almost entirely.

The number of patents granted was 34,003; design patents, 748; reissue patents, 151; trade-marks, 6,135; labels, 636, and prints, 279, or a total of 41,952. The expired patents which became public property numbered 24,270.

Congress at its last session increased the examining force by 33 men and also increased the salaries of all of the examiners. As a result of these increases the pending applications, which were very much in arrears, are now being brought up to date. The Commissioner of Patents informs me that by the end of the year the work of his entire office will be up to date.

The present legislative, executive, and judicial appropriation act, passed at the last session, embraced a provision as follows:

> That a commission which is hereby created, to consist of the Secretary of the Interior, the Commissioner of Patents, and the Secretary of the Smithsonion Institution, shall determine which of the models of the Patent Office may be of possible benefit to patentees or of historical value, such models thus selected to be cared for in the New National Museum building; the remainder of said models shall before January first, nineteen hundred and nine, be disposed of by sale, gift, or otherwise, as the Commissioner of Patents, with the approval of the Secretary of the Interior shall determine.

In pursuance of this provision the commission organized on the 29th of May and steps were immediately taken to carry out the provisions of the act. The Commissioner of Patents was authorized to proceed with the details of the disposition of these models. The Commissioner of Patents reports that all of the models, 157,000 in number, have been removed from the Union building. Some of the historical models have been placed on exhibition in the National Museum, and the others, which were deemed of importance as evidence in patent litigation and to aid examiners in searches, have been boxed, labeled, and catalogued and placed in the Patent Office part of the Department of the Interior building until the completion of the New National Museum building, where the law directs they shall be placed. The models were promptly removed and the rent for the space occupied has ceased. The total expense of moving these 157,000

models has been paid for out of the rent appropriated, $19,500, with a balance of $7,882.53 saved of said appropriated rent.

During the month of February my attention was directed to a patent, No. 872,936, which it was thought had been obtained by fraudulent means. I instructed the Commissioner of Patents to investigate the matter, with the result that within thirty days after the receipt of the first intimation by me John A. Heany, of York, Pa., an inventor; Henry E. Everding, an attorney of Philadelphia, and Ned W. Barton, an assistant examiner in the Patent Office, were indicted.

Barton, the assistant examiner, has pleaded guilty and been sentenced to the penitentiary for three years. The other defendants are being tried in the criminal court. Bills have been drawn and filed in the United States circuit court for the eastern district of Pennsylvania for the annulment of the patent granted, and two divisional patents of the same.

This is the first case of its kind that has occurred in the one hundred and eighteen years of Patent Office history.

The Commissioner of Patents has ordered such additional safeguards in the filing of papers as should prevent similar frauds hereafter.

The attitude of the employees of the Patent Office in connection with this case was most gratifying. The corps of examiners felt keenly the disgrace that a member of their corps had brought upon himself, but there was not the slightest desire to prevent the most thorough examination or to shield any person. It was recognized that the integrity of the work of the office could only be maintained by the discovery of whatever was wrong and the prevention of its recurrence.

BUREAU OF EDUCATION.

The act of March 2, 1867, provides that the Bureau of Education shall be established—

> for the purpose of collecting such statistics and facts as shall show the condition and progress of education in the several States and Territories, and of diffusing such information respecting the organization and management of schools and school systems and methods of teaching as shall aid the people of the United States in the establishment and maintenance of efficient school systems, and otherwise promote the cause of education throughout the country.

The estimates which I have submitted for the year 1910 provide for carrying out these provisions in a more satisfactory manner than is possible with the appropriations hitherto provided.

The bureau is now seriously hampered in its housing. It has invaluable collections of books and documents which are exposed to the danger of loss by fire. There is not sufficient room to carry on its

ordinary work to advantage. The rented building which it has occupied for a generation past is in bad repair and in such insanitary condition that the health of employees is in danger. Time has been lost during the current year by the illness of employees resulting from these conditions. I am accordingly asking for appropriations to cover the cost of rental of larger quarters in a sanitary and fireproof building, together with the cost of fireproof shelving and other necessary furniture, and the expense of removal.

To collect and diffuse such information as is demanded by the educational situation of the present day calls for the employment of experts in various departments of American education, some of them permanently and others occasionally, together with adequate provision for editorial and clerical service, traveling expenses, and related items. The office has only one expert in any branch of American education, namely, the specialist in land-grant college statistics. I am asking at this time for the permanent employment of three experts in other divisions, together with a competent editor, and provision for such special inquiries, reports, and correspondence as the educational needs of the country call for.

The bureau has one of the best special libraries of education in the country—in many respects the best—but very meagerly supported. I am asking for a moderate increase in the provision for this library.

Every effort has been put forth within the past two years to put the bureau into shape to make good use of larger resources and render an efficient service to the country thereby. The library has been pruned by the transfer of 58,000 pieces to the Library of Congress, and the administration of the collection remaining, over 140,000 pieces in all, has been reorganized in close connection with the Library of Congress and with other libraries of education throughout the country. The annual reports have been condensed and brought down to date. Volume I of the report for 1908 has already been read in final page proof. Every effort is making to complete the preparation of the manuscript of Volume II by the 31st of December. Close relations have been established with the education offices of the several States and Territories. A conference of state and territorial superintendents, called together in Washington last February, was attended by 37 out of the 50 such officers invited, and a committee appointed by that conference is now in consultation with this office with reference to improvements in its statistical work. Closer relations have also been cultivated with the state universities and agricultural and mechanical colleges of the country, as well as other educational institutions. The statistical reports of the bureau have been condensed and the blanks for the collection of statistical information have been revised. The issues of the bulletin, begun two years ago, have proved a popular and useful means of furnishing

timely information upon subjects concerning which information is frequently called for. The office force has been reorganized in accordance with the executive order touching such reorganization.

Altogether, the present resources of the office have been economized and utilized with great care in the discharge of the statutory functions of the office. The office has been put into shape to make good use of larger resources; and it will be unable to go much further in meeting the fair and reasonable demands made upon it until such resources are provided. The appropriations for the general work of the bureau, referred to above, are less for the current year than they were ten years ago. A considerable increase in appropriations will be necessary to bring up the arrears of the proper work of this office and put it in a position to make even a good beginning on the growth which it should make to parallel the growth of the educational needs of the country.

It is false economy to fail to provide increased appropriations for the work of the Bureau of Education. This work does not in any way conflict with the educational work of the States, counties, and municipalities. The duty of the federal bureau is to obtain information and give it to the States and smaller subdivisions. In this way the Bureau can be of the greatest assistance to those who are actually conducting the schools under the state laws. The Bureau should be the great central clearing house for collecting educational information—information about the best methods and the best systems—and presenting that information so that each State may select and use what is best suited to its own conditions.

The Commissioner of Education has been in close touch with those officers in the States who are charged with the duty of guiding and conducting educational work. The presidents of the state universities, the school superintendents of both municipalities and counties are in full sympathy with the work of the bureau, and desire that its work may be increased along the lines indicated in the report of the Commissioner of Education.

GEOLOGICAL SURVEY.

In the last few years the Geological Survey has broadened the scope of its work in the classification of the mineral lands of the public domain. At the time of the organization of the Survey the classification intended by Congress was believed to be general in character and such as could be expressed on maps issued for the general information of the people. The present interpretation of the law is that the classification should be more definite, and therefore during the last year the Survey has continued its special field surveys of the coal lands belonging to the Government. The geologic, topographic, and technologic branches of the Survey and the General Land Office have

cooperated in these surveys, which have provided for the classification and valuation of the coal lands and for their prompt segregation from the noncoal lands. A total of 22,700 square miles of coal fields was thus classified during the fiscal year 1907–8, and the valuation of the coal lands, based not only on the geologic field examination but on chemical and physical tests of coal collected from these lands, was reported to the General Land Office.

Geologic branch.—Incidental to the surveys for the classification of coal lands, important results have been secured relating to the stratigraphic and structural relations of the coal fields of the West, and the knowledge of the occurrence and distribution of this most valuable mineral has been greatly increased. Increased demands have also been made on the mining geologists of the Survey for assistance in determining the mineral or nonmineral character of land for which title from the Government is sought.

The goal to be reached in mining geology is the extension of systematic field surveys of all mineral deposits, so that geologic exploration may keep in advance of economic development. The prosecution of detailed areal mapping in all regions where active development of mineral deposits is in progress results in making prospecting less expensive and more efficient and in winning a much larger proportion of the ore deposits wherever the areal and structural relations thus become known, and therefore effects a double economy.

The survey of Alaska was continued under the special appropriation made for work in that Territory. About 20 per cent of the Territory has now been covered by reconnoissance geologic surveys. As the geologic mapping must form the basis for any fundamental study of the laws of occurrence and distribution of the mineral resources, it is evident that with only a fifth of the Territory mapped no comprehensive treatment of the subject of its mineral wealth can yet be attempted. Geologic mapping necessitates the preparation of base maps, which in themselves are indeed among the most valuable results for the purposes of the prospector and the mine operator.

In addition to the demand for the completion of the topographic and geologic reconnoissance surveys there is urgent need for detailed mapping of the important mining districts. Such detailed work costs much more than the reconnoissance work and need be undertaken only in regions that give promise of becoming important producers of mineral wealth. As soon as a district is established as a producer it is economy to cover it by detailed topographic and geologic surveys at once, as the maps and reports then become available when they are most needed by the mine operators.

In the collection of mineral statistics by the Survey the plan of cooperation between the division of geology and the division of mineral resources has been continued with even more satisfactory

results than were obtained during the two preceding years in which this plan has been followed. The value of the mineral products of the United States in the calendar year 1907 exceeded a total of $2,000,000,000, so that, notwithstanding the financial depression which occurred in the latter part of the year, 1907 will be recorded as one of the most prosperous years in the history of the mining industry. The endeavor to expedite the compilation and publication of the mineral statistics for 1907 resulted in the issue of five chapters and the transmission of twelve others to the printer during the first half of the calendar year 1908, as contrasted with one issued and five others transmitted in the corresponding period last year. In time of publication the chapters issued have averaged one and one-half months ahead of the same reports for the last year.

Topographic branch.—Topographic surveys were made in thirty-two States and Territories, covering 25,658 square miles. Of this amount, 14,949 square miles were surveyed in the public-land States. In addition 6,979 square miles of revision or resurvey were completed, making the total area actually surveyed during the season 32,637 square miles.

In Minnesota the special drainage survey of the ceded Chippewa Indian lands authorized by Congress was completed, 2,385 square miles having been mapped this year. These data will be used as the basis for the making of drainage plans by the Survey as directed by Congress.

In Mississippi an area of 1,200 square miles of swamp land in the Yazoo delta has been topographically surveyed in cooperation with the Tallahatchie drainage commission. This survey has been on the specially large scale of 2,000 feet to the inch, with 5-foot contour interval and with elevations established at the rate of 125 to the square mile. It is expected that these data will be used as a basis for drainage plans and construction by the Tallahatchie commission.

In California work has progressed steadily in mapping the Sacramento Valley, including the tule swamps, in cooperation with the State, 950 square miles having been covered on a special scale of 2 inches to the mile with 5-foot contour interval.

Water-resources branch.—During the last year an effort has been made to maintain as much as possible the investigations of the water resources of the country. The work performed may be divided, as formerly, into three parts: First, the investigation of stream flow and allied problems; second, the investigation of the occurrence, sources, and amounts of underground waters in various portions of the country, and, third, the investigation of the quality of water, both surface and underground. A combination of these three investigations is necessary to afford the data for the determination of water resources required in the appropriation act.

A feature of this work is the cooperation rendered by certain States—Maine, New York, and Pennsylvania making allotments of funds for cooperative investigations of water resources. Ground-water investigations were made in various parts of the country, and investigations of the quality of water involved the collection of 50,000 samples of water and analyses of the mineral contents of 4,800 samples.

The study of the water resources of Alaska, so far as they bear on the problem of placer mining, is well advanced, for, though only a comparatively small area has been actually surveyed hydrographically, the preliminary work in one of the most important placer districts is nearing completion and similar work in another has been well started.

The establishment of local offices in the West for at least a portion of the year has proved to be advantageous, not only in insuring better administration of the field work and in facilitating the discharge of official business, but in encouraging closer relations between the Survey and the public. This has been of special advantage in the work of the water-resources and topographic branches, as it is important to provide for the engineers in any district every possible opportunity to be informed of and to profit by the investigations of the Survey and to assist the Survey in meeting local needs.

Additional emphasis should be placed upon the study of the water resources of the country. Water is essentially a public resource and its uses from the headwaters down are distinctly public, whether they be for the domestic use of our great cities, or development of power, for irrigation, or, finally, for navigation. Furthermore, the questions arising from this great use of water are necessarily not confined to single States. They cover an entire watershed area, and hence in almost every case affect conditions in several States. It is therefore of prime importance that the Federal Government should increase its work of carefully studying water and its uses, so that we may be prepared to devote the public domain to the proper protection of water and provide for its use in such fashion as will best promote the public welfare and prevent the waste, misuse, or monopolization of water by private interests.

Technologic branch.—Another line of investigation was placed under the administration of the Geological Survey in May by authority of the Secretary of the Interior upon the appropriation by Congress of $150,000 for conducting investigations as to the causes of mine explosions, with a view to increasing safety in mining. The division of mine accidents was created May 22, 1908, and made a part of the technologic branch. The organization of this new work was immediately begun and authority was obtained from the Secretary of War for the use of a part of the old arsenal tract in Pittsburg as an

explosive station. This line of practical research is expected to decrease in some degree the present excessive loss of life in the mines as well as to diminish the waste of coal in mining.

The terrible accidents that have occurred in mines in our own country and abroad during the past year show most clearly the imperative need of most careful, systematic study of the conditions under which mines are being operated.

The appropriations which the Federal Government has made and will be asked to make for this investigation are as nothing when measured by the good which is being accomplished in finding out what methods can be adopted to prevent the loss of life and the many dreadful injuries which are daily occurring in our mines.

The work of the experimental station at Pittsburg meets with the approval and commands the interest of both the miners and the mine owners. They see that this work is being conducted in a thoroughly practical way. The tests and experiments regarding explosives are not mere laboratory tests, but are carried on under conditions identical with those that exist in the coal mines. The result of these experiments will be the standardization of explosives, the establishment of certain methods of mining, and the adoption of safety devices which will be of tremendous advantage to the mining industry.

The other technologic work of the Survey has included analyses and investigations of coals, lignites, and other mineral fuels, designed to prevent waste in mining and to promote their more efficient use by the Government for power and heating purposes; investigations of structural materials belonging to and used by the United States, and engineering and other investigations bearing upon the work of the Reclamation Service, the Isthmian Canal Commission, the Supervising Architect of the Treasury Department, and other branches of the government service having supervision of building and construction.

In January the Director of the Geological Survey submitted to the Senate Committee on Mines and Mining, at my request, a statement relative to the proposed establishment of another bureau in recognition of the mining industry. The part played by the Survey in the development of that industry in the last three decades was reviewed, and the effort was made to suggest legislation that would provide adequately for an increase in the mining work of the Federal Government without duplicating work already authorized. The opinion was expressed that the only true line of cleavage for separating the investigations concerned with the mining industry lies between the pure technology of the industry and those studies which relate to the distribution, occurrence, origin, and production of mineral deposits. Such studies have formed an increasingly important part of the Geological Survey's work since its organization, so that the whole ques-

tion resolves itself into the matter of making adequate provision for the other investigations now being conducted by the technologic branch of the Survey. The value of these investigations has been proved, and their scope may well be expanded along technologic lines without duplicating or overlapping the work of other branches of the survey.

Publications.—The Survey is a bureau of investigation and publication. Its relation to the public demands that the results of the scientific investigations intrusted to it be presented in the form best adapted to serve the purpose of publicity, and that these reports of investigations must be distributed with the greatest possible care and expedition. The current publications therefore furnish an important index to the nature and value of the work.

The publications of the year consisted of 1 annual report, 1 monograph, 2 professional papers, 30 bulletins (one of which was also published in 7 separate chapters), and 13 advance chapters from one other bulletin, 22 water-supply papers, 1 annual report on mineral resources for 1906 (also published in 45 separate chapters), 5 advance chapters from the annual report on mineral resources for 1907, and 9 geologic folios.

During the year 333,705 volumes, 39,389 folios, and 474,868 maps (including 369,521 sold), a total of 847,962, were distributed.

The nation's mineral resources.—The congressional enactment establishing the Geological Survey was inspired by an appreciation of the importance to the nation of its mineral resources. Since then the Survey's investigations have not only contributed largely to the development of the mining industry, especially in the public-land States, but have furnished quantitative data that are available at this time of popular awakening to the needs of national conservation.

The last year has been one of those periods through which any scientific work occasionally passes, in which the specific value and definite usefulness of results accomplished have been brought prominently into public notice. The people in general have learned to appreciate certain applications of the survey's investigations, which heretofore have in large part appealed only to persons who had become familiar with its work by reason of their professions or special interests.

The Survey's most notable contribution to the subject of national conservation during the year was the publication, on the eve of the governors' conference at the White House, of a map of the coal fields of the United States. This map presented both graphically and statistically the extent of the nation's coal reserves. Up to that time it had not been possible to prepare so accurate a map on account of the lack of data regarding the shape and extent of many of the western coal fields and the quality of their coal, but during the last

few years a large amount of such information has been obtained in connection with the classification and valuation of coal lands in the public-land States of the West. In carrying on this work the United States Geological Survey has mapped most of the important coal fields, and has tested many of the coals, so that the information at hand was believed to be sufficiently complete and conservative to warrant its publication.

At the request of the National Conservation Commission similar reports have been made by the Geological Survey on iron ores, petroleum, natural gas, metalliferous ores, phosphate, peat, Alaskan mineral resources, coal waste, waste in structural materials, swamp lands, denudation, water power, ground waters, and water circulation and its control.

RECLAMATION SERVICE.

The operations of the Reclamation Service during the past year have been confined mainly to the continuation of construction upon projects previously approved. Investigations for new projects have been confined mainly to measurement of water supply, which for its proper determination requires observations extending through a long series of years. The construction work has been carried on largely by contract, but construction under direct administration has been undertaken where contractors have failed or where reasonable bids have not been received. As indicating the character and magnitude of construction accomplished, the following table is submitted:

Summary of results of reclamation work from June 30, 1903, to June 30, 1908.

		Quantity.
Area irrigated	acres	353,050
Area under ditch	do	978,365
Farm units		5,959
Bridges		648
Length of bridges	feet	19,231
Canals carrying 300 second-feet or over	miles	412
Canals carrying between 50 and 300 second-feet	do	460
Canals carrying less than 50 second-feet	do	1,508
Cement used	barrels	638,237
Concrete laid	cubic yards	772,804
Dikes and levees built	linear feet	296,938
Earth excavated	cubic yards	47,038,620
Loose rock excavated	do	2,841,538
Solid rock excavated	do	2,787,820
Road constructed	miles	374
Riprap laid	cubic yards	265,289
Reservoir capacity completed	acre-feet	879,100
Structures built, costing over $2,000		312
Structures built, costing between $500 and $2,000		481
Structures costing less than $500		4,390

	Quantity.
Telephone line built.....miles..	874
Telephones in use.....	300
Tunnels built.....	57
Length of tunnels.....feet..	82,279
Cost of lands purchased.....	$1,612,641

Under the provisions of the law the receipts from the sale of public lands are turned into the reclamation fund after certain sums defined by the law have been deducted. The accounts of this fund are adjusted annually at the end of the fiscal year, June 30. The compilation of reports and computations of various charges and deductions usually require about six months in the Land Office and Treasury Department, so that the warrant for any fiscal year does not issue until the 1st of January following, whereupon the fund becomes available for expenditure. The amount of this warrant, however, can be approximately estimated at the close of the fiscal year, and in July careful examination is made of the needs of the various projects and approximate allotments of the funds for the calendar year are tentatively determined upon. By thus announcing the plans and giving instructions about five months in advance, the work can be carried on with greater economy and better continuity of plan.

The date of the availability of the annual increments to the fund makes it convenient and necessary that allotments be made by calendar years rather than fiscal years. This is also in accordance with the convenience and economy of construction work, which, on most of the projects, is much more active in summer than in winter on account of climatic conditions.

In the following table is given a list of the approved irrigation projects of the Reclamation Service, with the area to be reclaimed, the estimated cost of construction, the estimated expenditures to December 31, 1908, and the corresponding per cent of completion at that date:

Approved irrigation projects.

Location.	Project.	Area.	Estimated cost.	Estimates December 31, 1908.	
				Expenditures.	Per cent of completion.
		Acres.			
Arizona	Salt River	240,000	$7,900,000	$5,850,000	61.6
Arizona-California	Yuma	92,150	5,630,000	2,875,000	51.0
California	Orland	30,000	1,500,000	168,000	11.2
California-Oregon	Klamath	165,000	5,950,000	1,693,000	28.5
Colorado	Grand Valley	50,000	2,500,000	50,000	2.0
Do	Uncompahgre	146,000	5,500,000	3,515,000	64.0

Approved irrigation projects—Continued.

Location.	Project.	Area.	Estimated cost.	Estimates December 31, 1908.	
				Expenditures.	Per cent of completion.
		Acres.			
Idaho	Minidoka (gravity)	84,200	1,780,000	1,780,800	100.0
Do	Minidoka (pumping)	49,900	600,000	211,000	35.2
Do	Payette-Boise, South Side Division.	132,000	4,765,000	2,250,000	47.2
Kansas	Garden City	10,656	355,000	355,000	100.0
Montana	Lower Milk River[a]	160,000	6,250,000	250,000	4.0
Do	Huntley	33,000	840,000	840,000	100.0
Do	Sun River, Fort Shaw unit	16,000	480,000	488,000	100.0
Nebraska-Wyoming	North Platte	96,000	4,200,000	3,940,000	93.8
Nevada	Truckee-Carson	100,000	4,390,000	3,951,000	90.0
New Mexico	Carlsbad	20,000	640,000	640,000	100.0
Do	Hondo	10,000	370,000	370,000	100.0
Do	Rio Grande	160,000	8,000,000	65,000	.8
Do	Leasburg unit[b]	.....	210,000	210,000	100.0
North Dakota	Buford-Trenton	12,500	316,000	316,000	100.0
Do	Nesson	18,500	740,000	18,000	4.5
Do	Williston	12,000	474,000	474,000	100.0
North Dakota-Montana	Lower Yellowstone	66,000	2,754,200	2,570,000	82.5
Oregon	Umatilla	20,440	1,208,400	1,065,000	82.0
South Dakota	Belle fourche	100,000	3,400,000	2,000,000	58.8
Utah	Strawberry Valley	60,000	2,880,000	630,000	21.9
Washington	Okanogan	9,000	585,000	455,000	77.8
Do	Sunnyside	99,000	2,253,000	881,000	39.1
Do	Tieton	80,000	1,800,000	987,000	54.8
Do	Wapato	120,000	3,600,000	19,000	5.6
Wyoming	Shoshone	150,000	7,560,000	3,175,000	42.0
	Total	2,292,346	89,431,500	42,091,000	.....

[a] This does not include the St. Mary project, on which the estimated expenditure is $257,000.

[b] The Leasburg diversion dam will furnish a temporary, intermittent supply to about 20,000 acres, which will be a portion of the Rio Grande project and share in the benefits of the Engle Dam.

An act called the "public irrigation law" passed the legislature of Porto Rico and was approved by the governor on the 18th day of September, 1908. It appropriated $200,000 for the "preparation of working plans and specifications for the construction of an irrigation system for the district situated approximately between the River Patillas on the east and River Portugues on the west, and irrigable lands on both sides of both rivers, and for the commencement and prosecution of the work of construction thereof, and expenses in connection therewith until such time as sufficient funds shall be available in the treasury from the sale of bonds provided for such purpose by legislative enactment." Provision is made for the issue and sale of $3,000,000 in 4 per cent bonds to defray the expenses of constructing

the above irrigation works, the cost of which is to be collected by taxation of the lands benefited. The act further provides that—

> Immediately upon the approval of this act the engineer heretofore in charge of the survey and study of the said irrigation project, or his successor, as hereinafter provided, shall proceed at once to the completion of the plans and specifications, attaching thereto a descriptive memorial of the works and showing and justifying in full all necessary work to be done and expenses to be incurred in the construction of the said irrigation system, and shall submit the same to the Director of the United States Reclamation Service for report, but in the event of his inability to so act, to one or more engineers selected by said Director of the United States Reclamation Service, provided that the said director, or the engineer or engineers selected by him, shall transmit a general specific report to the governor of Porto Rico touching all matters contained in the memorial and plans and specifications of the engineer in charge of the irrigation works in Porto Rico.

In pursuance of the above law the irrigation engineer of Porto Rico has submitted plans and specifications for an extensive system of irrigation for southern Porto Rico, and arrangements are being made for an examination of the locality of the said works by engineers of the Reclamation Service, at the expense of Porto Rico.

The government of the Philippine Islands has organized a "bureau of public works," and in this bureau a division of irrigation. An annual appropriation of ₱750,000 is provided for the surveys, plans, and construction of irrigation works, and surveys are now in progress. The governor of the islands has applied for the services of a consulting engineer from the Reclamation Service, and an effort will be made to detail a competent engineer from that service at the proper time at the expense of the Philippine Islands.

SALT RIVER PROJECT, ARIZONA.

This project comprises in the main the construction of a large storage reservoir at the mouth of Tonto Creek on Salt River and the diversion of this water at the head of the valley, about 40 miles to the westward, and its distribution through canals and ditches to about 200,000 acres of very fertile land in the vicinity of Phoenix, Ariz.

The area to be irrigated is far in excess of the water supply, and as the productivity of the land is very great it becomes of first importance that the water supply be utilized and increased as fully as conditions will permit.

Large opportunities for the development of power are incidental to this project and are being used for the principal purpose of pumping water from underground, large quantities of which may thus be obtained for supplementing the supply furnished from the reservoir.

A contract for the large masonry storage dam on upper Salt River was let to James O'Rourke & Company, of Galveston, Tex., in April

1905. Since work began a series of unusual floods have occurred, washing out the protective works of the contractor four successive times and filing in excavated portions of the foundation.

The dam has now reached a height of about 70 feet and some regulation of fluctuation of the river flow can hereafter be undertaken.

One of the great floods which damaged the contractor in November, 1905, also washed out the Arizona dam, which had served to divert water just below the mouth of Verde River into the Arizona canals for the use of this and other canals on the north side of the Salt River. The entire north-side system was purchased by the Reclamation Service in 1906, and a concrete dam for diverting water into it has recently been completed at Granite Reef, below the old Arizona dam. The Arizona canal has been enlarged, straightened, and greatly improved, and the entire distribution system on the north side of the canal has been remodeled and almost entirely reconstructed, effecting a considerable economy of water and far more efficient service than ever before.

A canal to connect Granite Reef dam with the south-side system of canals is under construction and will soon be completed. When this is accomplished the Granite Reef dam will serve as a heading for the entire canal systems on both sides of the river, with the exception of some small canals that pick up seepage water from the river in the lower part of the valley.

The Salt River project as a whole is about 75 per cent completed.

YUMA PROJECT, ARIZONA.

The Yuma project provides for the diversion of Colorado River into its valley on both sides about 12 miles northeast of Yuma, Ariz. It will irrigate about 17,000 acres of land on the California side, mainly on an Indian reservation, and about 75,000 acres on the Arizona side. The dam will have a total length of 4,780 feet, a width of 257 feet, and a maximum height of 19 feet. The construction of this dam was begun under contract in July, 1905, but owing to the uncertainties of river control it finally became necessary for the Reclamation Service to assume its construction under force account. A spur railroad has been built connecting with the main line of the Southern Pacific, and the final closure of the river is now being made. Barring unexpected catastrophes, the dam will be completed during the current winter and water will be turned into the canal on the California side some time next summer.

The Yuma project as a whole is 53 per cent completed.

In response to a very urgent and practically unanimous petition from the people of the Imperial Valley, the Reclamation Service has undertaken the survey of a high-line canal to connect with

Laguna dam the Imperial Valley, in order to provide for the irrigation of about 200,000 acres of land lying above the canals in that valley.

ORLAND PROJECT, CALIFORNIA.

The Orland project will provide storage reservoirs on the headwaters of Stony Creek, the waters of which will be used in the vicinity of the town of Orland, Cal. A contract has been let for the construction of a storage reservoir at East Park, and work is now in progress on the diversion dam and canals. This project is regarded as the initial unit of a project for the general development of the Sacramento Valley. The Orland project is about 15 per cent completed.

GRAND VALLEY PROJECT, COLORADO.

Surveys have been made for the diversion of Grand River in the canyon above Palisades, and the construction of canals and tunnels to convey the water by a high line through the valley about Palisades, Grand Junction, and Fruita to irrigate the lands above existing canals. This project will irrigate about 50,000 acres of land.

UNCOMPAHGRE VALLEY PROJECT, COLORADO.

This project will divert the waters of Gunnison River through a tunnel about 6 miles in length into the Uncompahgre Valley, to irrigate about 140,000 acres of land, a portion of which already has a partial water supply.

The tunnel was first contracted, but since the financial failure of the contractor work has been prosecuted by force account under the engineers of the Reclamation Service. The great difficulties enumerated in previous reports have continued, the water in the river end of the tunnel being specially troublesome. Water is also increasing in the lower end of the tunnel, but as this is drained by gravity it does not present very serious difficulties. The progress on this work to the end of October was as follows:

	Linear feet.
East end:	
Full section	7,056
Undercut drift	2,358
Total east end	9,414
West end:	
Full section	13,546
Undercut drift	3,261
Total west end	16,807
Total full section	20,602
Total full and undercut drift	26,221
Concrete lining:	
West end	8,484
East end	None.

The canal system for the Uncompahgre Valley project is nearly completed, but owing to the treacherous nature of the material in the bad lands through which it runs great labor and expense is involved in properly priming and repairing leaky portions.

MINIDOKA PROJECT, IDAHO.

This project diverts water from Snake River, near the station of Minidoka, Idaho. About 60,000 acres on each side of the river will be irrigated from this diversion under the present plans and the canal systems for this have been practically completed. A portion of the lands on the north side and most of those on the south side lie above the gravity canals and will be served by pumping, the power being developed at the diversion dam, which is about 50 feet high. The gravity system of this project is practically completed and the pumping system is about 40 per cent completed.

PAYETTE-BOISE PROJECT, IDAHO.

The Payette-Boise project provides for the storage of waters on both Payette and Boise rivers, with storage reservoirs on each stream. A diversion dam about 40 feet high has been completed in Boise River, which diverts water into a large canal leading to a storage reservoir which has been constructed a few miles west of Nampa, known as the "Deer Flat Reservoir." Two large earthen embankments were required to form this basin and have been completed. The large canal was in service during the past irrigating season in an incomplete state, but it is now nearing completion. It serves a large area of land between the diversion point and the Deer Flat Reservoir and will be used during the nonirrigating months for filling the reservoir.

GARDEN CITY PROJECT, KANSAS.

This project will obtain water for irrigation by pumping from underground. For this purpose a power plant has been constructed at Deerfield, Kans., consisting of steam turbines driving electric generators, from which the power is delivered to 23 separate pumping stations, supplying about 8,600 acres in the vicinity of Garden City. The system has been in operation during the latter part of the past summer and is expected to fully serve the lands under it during the next irrigating season.

HUNTLEY PROJECT, MONTANA.

The Huntley project diverts water from the right bank of Yellowstone River at a point about 3 miles above Huntley, Mont. This project served about 20,000 acres of land during the past season

and demonstrated the fertility thereof. The lands to be reclaimed form a portion of the area which the Crow Indians by treaty ceded to the United States in 1904. The settlement of the project has been steady and satisfactory and the settlers have met with gratifying success, considering the difficulties of the first year in a new region.

MILK RIVER PROJECT, MONTANA.

The settlers on Lower Milk River nearly a year ago petitioned the department to build diversion works for a flood-water canal from Milk River and volunteered to construct the canal system themselves, taking credit upon their water rights for labor thus performed. Arrangements to this effect were accordingly made and surveys prosecuted during the past summer. The Reclamation Service is now building a diversion dam near Dodson, in pursuance of the above arrangement, and the settlers have excavated about 110,000 cubic yards of earth on the main canal.

ST. MARY PROJECT, MONTANA.

On this project operations with steam shovel and excavator have been continued through the favorable season, and satisfactory progress has been made.

SUN RIVER PROJECT, MONTANA.

Sun River project provides for the irrigation of a large acreage on both sides of Sun River and the regulation of its waters by a number of reservoirs. The first unit provides for the irrigation of about 18,000 acres in the vicinity of Fort Shaw. This unit was completed in the spring of 1908. Some damage was done by the unusual floods about the time of the completion, but this was repaired in time for use. A considerable acreage is now open to homestead entry under the provisions of the reclamation act and the opportunities for successful settlement are great.

LOWER YELLOWSTONE PROJECT, MONTANA-NORTH DAKOTA.

This project provides for the diversion of Yellowstone River on the north side about 18 miles below Glendive, Mont. The main canal is nearly completed and the greater portion of the distribution system is also ready for service. The diversion dam was contracted with the Pacific Coast Construction Company, but owing to physical disasters to their work and financial difficulties the contract was abandoned in August. The work was subsequently prosecuted by force account. It has been necessary to close down work on account of the season, but it is the intention to complete the dam next summer under force account.

NORTH PLATTE PROJECT, WYOMING-NEBRASKA.

The waters of North Platte River will be entirely controlled by a large reservoir now under construction about 50 miles above Casper, Wyo. These waters will be used for the reclamation of lands on both sides of the river in Wyoming and Nebraska, between Casper, Wyo., and Bridgeport, Nebr.

The storage reservoir has been named the "Pathfinder," and the great masonry dam which will impound over 1,000,000 acre-feet of water is about 90 per cent completed. The first unit of irrigation from this storage is the Interstate Canal, heading near Whalen, Wyo., and watering about 30,000 acres in Wyoming and 80,000 in Nebraska. The diversion dam near Whalen was contracted by S. R. H. Robinson and partially built, but was abandoned by the contractor during the past summer. Its completion has been undertaken by the Reclamation Service under force account. Water was delivered to about 60,000 acres of land during the past season under the Interstate Canal, and this will be increased to 100,000 during next season from canals now being completed. The agricultural results from the irrigated lands during the past year have been very satisfactory.

TRUCKEE-CARSON PROJECT, NEVADA.

The Truckee-Carson project provides for the storage of water in the upper basin of Truckee River and its diversion upon lands in the valleys of Truckee and Carson rivers mainly lying in the lower Carson basin. A large conduit of 1,400 second-feet capacity has been completed, diverting water from Truckee River and carrying a capacity of 1,200 second-feet to Carson River for use in that basin. The main canal from Carson River has also been completed and about 100,000 acres of lands placed under irrigation. A large portion of these lands is still open to homestead entry under the provisions of the reclamation act.

CARLSBAD PROJECT, NEW MEXICO.

This project was first constructed by private enterprise nearly twenty years ago, but was not successful physically or financially. After contending with washouts and various other disasters the proprietary company in 1905 found itself unable to replace the Avalon Dam, which had been destroyed by a flood in 1904 and upon which the canal system depended for its supply. The property was purchased by the United States and Avalon Dam was rebuilt. Many repairs and improvements were necessary, and the canal system is now completed. Operations are now in progress for the right of way of the MacMillan Reservoir, which is the principal reservoir for the

project. Water was delivered to about 8,000 acres during the past season and it is expected that the entire project of 20,000 acres will be supplied during 1909.

HONDO PROJECT, NEW MEXICO.

Hondo project is now practically completed and provides for the storing of the waters of Hondo River in a basin constructed to the north of the river, from which the stored waters will be discharged into the channel of Hondo River below and diverted upon lands in the vicinity of Roswell, N. Mex. This project contemplates the reclamation of 10,000 acres of land.

RIO GRANDE PROJECT, NEW MEXICO-TEXAS.

The Rio Grande project contemplates the construction of a large storage reservoir below the station of San Marcial on the Santa Fe Railroad. This reservoir will have a capacity of over 2,000,000 acre-feet and is designed to completely regulate the entire flow of the river at this point. The stored waters will be diverted at four different points and will irrigate about 180,000 acres of land in the United States, a small portion of which is now under cultivation with a very uncertain water supply from the natural flow of the river. By treaty with Mexico 60,000 acre-feet of water will be delivered from this reservoir annually at the head of the Mexican ditch in El Paso for use on the Mexican side. To provide for the proportionate share of the expenses, Congress made a direct appropriation of $1,000,000, which is being used in the acquirement of rights of way for the reservoir and in preparations for the construction of the dam. These preparations consist of the extension of the foundation and abutments and the establishment of camp and water supply.

A survey has been made for a railroad from Engle to the dam site, and negotiations are in progress with the Santa Fe Railroad Company to secure the construction of a spur line to the dam site.

The first diversion dam has been completed in the vicinity of Fort Seldon, and the unregulated waters of the river have been delivered to the canals about Lascruces during the past season, 16,000 acres having been thus irrigated.

BUFORD-TRENTON AND WILLISTON PROJECTS, NORTH DAKOTA.

During the past season water was delivered from two pumping projects constructed on the left bank of the Missouri River, raising water from that stream into the canals by means of power generated with the lignite which abounds in that vicinity. The central power station is located near Williston, and power is transmitted to the pumping station near Buford in the form of electric currents.

The season of 1908 has been unfavorable for the growth of crops and but a small acreage was irrigated. A much larger acreage will be supplied during 1909.

KLAMATH PROJECT, OREGON-CALIFORNIA.

The Klamath project involves the reclamation of lands in Oregon and California by the use of waters from upper Klamath Lake and Lost River, near Klamath Falls, Oregon. A large canal from upper Klamath Lake to Lost River has been completed by contract and water was delivered in the past season to the lands along its course. A power canal on the right bank of Link River has been completed, which will furnish power for local use and supply the needs of the company whose enterprise has been superseded by the Government. A contract has been let for the east branch extension of the main canal and work has begun on force account upon a dam at the outlet of Clear Lake to convert this lake into a storage reservoir for use in the Langell and Yonna valleys.

UMATILLA PROJECT, OREGON.

The Umatilla project diverts the water from Umatilla River and conducts it by means of a long conduit to a reservoir recently constructed near Cold Springs. This reservoir is formed by building an earthen dam about 100 feet high across a dry ravine. This dam was completed in the early part of 1908. The reservoir thus formed has a capacity of about 50,000 acre-feet. The outlet canal and distribution system were built mainly by contract, and about 7,000 acres were placed under water in 1908. A larger area will be available in 1909, probably about 10,000 acres. The project contemplates the reclamation of about 20,000 acres.

BELLE FOURCHE PROJECT, SOUTH DAKOTA.

The Belle Fourche project provides for the diversion of the waters of Belle Fourche River and their storage in a large reservoir to be constructed on Owl Creek at its junction with Dry Creek. The diversion dam and feed canal have been completed and work is being carried on under contract on a large earthen dam across Owl Creek. Water was ready for delivery during the past season on about 12,000 acres of land and a considerable portion of this area was placed under cultivation. Work has been in progress during the past season on an extension of the south side canal, and a considerable additional area will be placed under irrigation during the coming year.

STRAWBERRY VALLEY PROJECT, UTAH.

The Strawberry Valley project provides for the construction of a storage reservoir on Strawberry Creek, a tributary of the Duchesne River, Utah. Stored water will be diverted through a tunnel 4 miles in length and discharged into Diamond Creek, a tributary of Spanish Fork River. A canal for diverting this water from Spanish Fork River has been completed and placed in service. A power plant has been installed on this canal and is about ready for operation. The power will be used for the construction of the tunnel which has been opened and will be prosecuted during the present winter.

OKANOGAN PROJECT, WASHINGTON.

The Okanogan project, in northern Washington, provides for the storage of water on Salmon River and its diversion at a point lower down to cover bench land lying between Alma and Riverside, on the bench west of Okanogan River. The Conconully Reservoir, on Salmon River, is being constructed by force account, the earth and gravel being placed by sluicing methods similar to those used in hydraulic mining. About one-third of the entire amount of material required for this dam has been placed. The Okanogan project as a whole is 83 per cent completed.

SUNNYSIDE PROJECT, WASHINGTON.

The Sunnyside canal system of the Washington Irrigation Company, which was purchased by the Reclamation Service, has been enlarged and improved for the better service of the larger area of land. A permanent dam of concrete and headworks of the same material have replaced the former structures and were in use during the past season. An extension of the system has been completed and water will be delivered the coming year to lands in the vicinity of Mabton, on the south side of Yakima River. A large wasteway below Zillah has been completed and greatly increases the safety and efficiency of the system. Storage has been provided also on Lakes Kachess, Kichelus, and Clealum, which will be replaced by larger permanent dams below.

TIETON PROJECT, WASHINGTON.

The Tieton project diverts water from Tieton River on the right bank in the Tieton Canyon, and carries it along the canyon wall and over the divide into the Cowiche basin, where an area of about 30,000 acres can be watered. The work in the canyon is largely in rock and difficult of access, and involves a large amount of tunneling. The excavation of the tunnels has been nearly completed and the lining of the same is now in progress. The open canal, which will be lined

with concrete, has been more than half completed, and these works will be finished in 1909. The waters utilized for this project are appropriated lower down from Natches River, into which the Tieton flows. The water to be diverted from the Tieton will be supplied to the prior appropriators on the Natches by storage in Bumping Lake reservoir, the construction of which will be undertaken next year. A road to this reservoir is now about completed.

SHOSHONE PROJECT, WYOMING.

The Shoshone project contemplates the control of the waters of the storage reservoir by the construction of a dam 328 feet high, 8 miles above Cody, Wyo. This dam, which is being constructed by contract, will be the highest dam in the world. The work on the dam has been delayed by washouts and financial difficulties, but is now progressing satisfactorily and will probably be completed within a year. The reservoir to be formed will have a storage capacity of about 420,000 acre-feet. A diversion dam and tunnel have been completed near Corbett, and water was delivered to about 15,000 acres during the past summer. A considerable portion of this project has now been settled and settlers are coming in at a satisfactory rate. Additional areas will be covered by a distribution system and placed under irrigation as settlement demands.

PRINTING AND PUBLICATIONS.

In compliance with the provisions of sections 681 and 683, Revised Statutes, and the acts of February 12, 1889 (25 Stat. L., 661), and July 1, 1902 (32 Stat. L., 630), 2,899 volumes of the United States reports, one set of Russell & Winslow's Digest, and 115 sets of the reports published by the Lawyers' Cooperative Publishing Company were received by the department and distributed to executive and judicial officers of the Government.

As provided in section 5 of the act of July 1, 1902 (26 Stat. L., 630), 32 sets of Revised Statutes of the United States and supplements were distributed to Senators and Representatives.

As the distribution of United States reports and Revised Statutes is in no way connected with the work of this department, it is recommended that this be transferred to the Superintendent of Documents.

Careful attention has been given to the department printing, and it is estimated that a saving of $30,000 has been effected by reason of the more careful scrutiny of printing requests.

Blank forms have been standardized both as regards size and quality of paper, and the use of a cheaper grade has been substituted wherever this could be done without detriment to the public service. Expensive leather bindings have been discarded, and canvas, buckram, and book cloth are now used almost exclusively for binding the books of the department.

TERRITORIES.

The following order of the President of May 11, 1907, has continued in force:

It is hereby ordered that on and after June 1, 1907, all official communications or reports from and to executive officers of the Territories and territorial possessions of the United States—viz, Arizona, Hawaii, New Mexico, Oklahoma, Porto Rico, Alaska, Indian Territory, Samoa, and Guam—and all official communications or reports relating to territorial matters from and to all executive officers of the United States stationed in such Territories and territorial possessions, shall be transmitted through the Secretary of the Interior in such manner and under such regulations as he may prescribe.

The result of thus centralizing information regarding the Territories and placing their administration, so far as the law permits, under a single department, has proved of great benefit.

Business with the territorial officials is handled without unnecessary delay, and there is harmony and uniformity in the decisions relating to territorial administration.

ARIZONA.

Conditions in Arizona are steadily improving. The population is now estimated at 200,000, an increase of 15,000 during the year.

The financial condition was never better, the territorial treasury showing an increase of $75,308.86 over last year. Taxable property has increased to $80,000,000, an increase of $3,000,000 over the preceding year, while the territorial rate of taxation is not increased and the local rate of taxation throughout the Territory has decreased. There is no difficulty in caring for the current expenses of the Territory and the retiring of the bonded indebtedness, $10,000 of which was retired during the year.

The organization and use of the rangers has been most satisfactory in the enforcement of law and order.

The annual school census gives 34,299 as the number of children of school age (6 to 21 years) in the Territory. The total number of children enrolled in the schools is shown to be 28,836. This would indicate apparently that nearly 8,000 children fail to attend school, but it is explained that most pupils finish school at the age of 18, although they are enumerated in the school census until they are 21.

Practically all of the children who attend no school are of Mexican parentage. To remedy the evil of nonattendance at school the legislature has enacted a law which makes attendance compulsory under severe penalties for parents and guardians. There are 301 school districts, employing 645 teachers, 109 men and 536 women. The average monthly salary paid men teachers was $99.50; for women it was $75.06.

Notwithstanding the reduction in the production of copper, the mining operations in the Territory show an increase over last year, and the agricultural possibilities have been greatly increased by the development of irrigation projects, experiments in dry farming, and the introduction of new grasses on the open ranges.

In view of the improved showing made in all directions, the demand of the people for statehood is fully justified.

NEW MEXICO.

The rapid increase in population referred to in my report of last year continues. Nearly 15,000 homestead entries on over two and one-quarter million acres of land were made during the year. It is significant that this increase in the agricultural population is not confined to the river valleys, but much of it is found along the mesas which, until recently, have been given up entirely to grazing. This fact is due to the success of dry farming. If this proves an ultimate success, it is estimated that nearly 50,000,000 acres of land in New Mexico will be available.

The population of the Territory is now estimated at 450,000, an increase of 50,000 over last year.

It is believed that the construction of government reclamation projects, the increase in railroad building, the increase in the number of banks and mercantile firms, the output of the coal mines and lumber mills, and the development of the farming and grazing industries have increased the wealth of the Territory not less than $25,000,000, and the promises are that the coming year will show a still greater increase.

The financial condition of the Territory was never better, the balance on hand in the Treasury at the end of the fiscal year being $33,528.13 in excess of that of the preceding fiscal year.

The advancement in educational conditions keeps abreast of the material development of the Territory. The last school census shows a school population of 84,942, as against 78,360 in 1906. The fact that all persons between the ages of 5 and 21 are included in the school census causes the enrollment of 40,000 to bear a much lower rate to the school population than it would if the school census included persons between the ages of 6 and 21, as in most other States and Territories. Nine hundred and twenty-nine teachers were employed at an average salary, in the cities and towns, of $68.20, and in the rural districts, of $51.48. The total value of school property is $964,184.

In short, the improved and improving conditions along all lines are such as fully justify the demand of the people for statehood.

The production of coal in New Mexico during the fiscal year ended June 30, 1908, according to the report of Mine Inspector J. E. Sheri-

dan, exceeded that of the preceding fiscal year by 279,489.2 tons, or 12.58 per cent, the quantity mined having been 2,500,873.2 tons. The money stringency and a mild winter in the West and Southwest operated to prevent a larger increase in production. The mines were therefore not continuously operated, and during the last eight months of the fiscal year many of the foreign-born miners returned to Europe.

For several years the coal area of New Mexico has been estimated at 1,430,480 acres and the available coal at 8,809,840,000 tons, but an investigation made by geologists of the United States Geological Survey has immensely increased the estimate of coal land and of available coal, which are now fixed at 13,335 square miles (8,534,400 acres) and 163,780,000,000 tons still available, more than 18 times the tonnage estimated by the office of the territorial mine inspector.

The coal lies principally in the Raton field, which comprises 1,360 square miles (870,400 acres) containing 30,805,000,000 tons of bituminous coal, and in the San Juan field, which comprises 11,600 square miles (7,424,000 acres) containing 131,375,000,000 tons of subbituminous coal (principally). The Cerrillos, Carthage, and other fields include 375 square miles of coal land, containing 1,600,000,000 tons of coal—anthracite, bituminous, and subbituminous.

There were during the year 34 fatal accidents among the 3,670 persons employed in the mines, a ratio of 9.03 persons killed for each 1,000 employed. Of these 11 were killed by a coal-dust explosion, 16 by falling rock, and 7 by other causes.

ALASKA.

The population of Alaska is estimated at 31,000 permanent whites, 7,000 transients who are employed in the mines, canneries, and railroad camps during the summer and leave at the close of the season, and about 35,000 natives.

The assessed valuation of property in the district is $9,249,300, and the rate of taxation ranges from 1 to 2 per cent.

Settlement of the public domain does not appear to have been very extensive during the past year, only 439 homesteads having been taken up during that time.

There has been a slight decrease in commerce between Alaska and the United States due to labor troubles, reduced gold output, lessened demand for merchandise, and the fall in the price of copper, the total value of merchandise shipped to the United States during the year being $31,766,044.

Gold, still the leading product, is being successfully mined throughout the whole Territory, the value of that metal shipped to the

United States during the year being $17,490,777, of silver $13,007, and of copper $474,172.

Extensive fields of high-grade coal have been found in the Matanuska River and Bering River valleys, and workable deposits of coal are reported in the region of Norton Bay, near tidewater. The great value of the coal fields of Matanuska and Bering rivers having been determined and the transportation assured, the development of these fields will rapidly follow. The existing coal-land laws require radical modification. These changes should be made in accordance with whatever general method Congress may prescribe for the disposition of the coal lands in the United States proper, with such additional provisions as may be necessary to meet the special conditions in Alaska.

Other minerals produced in more or less paying quantities throughout the Territory are tin, lead, petroleum, antimony, graphite, bismuth, cinnabar, and talc.

The experiment stations conducted by the Department of Agriculture have produced satisfactory results. Wheat and oats have been fully matured, and a great variety of plants and vegetables have been cultivated. The experiment of raising sheep and Galloway cattle on Kodiak Island is progressing successfully.

The total pack of the salmon canneries for the year will be about 2,000,000 cases of 4 dozen 1-pound cans each. The price of salmon has been such as to insure good profit during the year. Other fish that enter into the commerce of Alaska are halibut, cod, herring, and whale.

Construction work upon various railroads shows the following results: The Council City and Solomon River Railroad and the Seward Peninsula Railway are completed and in operation. The Copper River and Northwestern Railway has changed its terminus from Katalla to Cordova and has now 25 miles of track laid in the direction of Abercrombie Rapids. The Alaska Central Railway has 53 miles of track laid. The Tanana Mines Railroad is operating successfully about 50 miles of railroad to Dome and Vault creeks and the Chatanika River, and the Alaska Short Line Railway has a terminus at Iliamna Bay. The Valdez and Yukon Railway has about 1 mile of track laid, and the Yakutat and Southern Railway has 15 miles of track.

The education of white children, which is placed under the jurisdiction of the governor by the act of January 27, 1905, has been progressing favorably; and the education of the natives under the Bureau of Education is also accomplishing good results. It is recommended, however, that a compulsory education law be passed.

The services rendered to the people of Alaska by the military cable and telegraph companies continue to be excellent. The lines are

being strengthened, and the services growing better from year to year.

The general administration of affairs in the Territory has not been by any means free from difficulty. Many of the settlements are still mining camps where the authorities have to face the usual conditions attendant upon life in such communities. There has, however, been a better enforcement of law and the gradual eradication of the gross evils arising as a result of the misuse of liquor and from gambling.

The condition of the Indian is improving. The sanitary work inaugurated by the Bureau of Education is tending to minimize the effect of disease and is accomplishing very beneficial results.

I desire to emphasize the recommendation made by the governor for legislation on the following subjects:

The fourth judicial division; the issuance of bonds by the town of Valdez to construct dikes to protect itself against glacial streams; the payment for the care of the insane of Alaska out of the United States Treasury; the change in licenses for the sale of intoxicating liquor and preventing the maintenance of gambling and dance halls, and the sale of whisky to Indians; for the control of the practice of medicine; the better lighting of the coast; the defining of what constitutes assessment work on a mining claim; the labor lien law; the sale of town sites; affording the natives of Alaska the right to acquire public lands; and providing for the extension of the limits of incorporated towns under the supervision of the courts.

HAWAII.

Careful attention should be given the report of the governor of Hawaii because of the constantly increasing importance of the Territory of Hawaii to the United States. Both politically and commercially the Territory occupies a unique position.

Future legislation affecting Hawaiian interests must be so framed as to closely unite its interests with those of the mainland. The people of the Territory thoroughly appreciate that the benefits which annexation gave them brought corresponding obligations to the United States. On the other hand, the people on the mainland should realize that the Territory is an integral part of the United States and must be treated as such.

This, of course, does not mean that all the laws of the United States should be made applicable to the Territory. Legislation must be in conformity with any special or unusual conditions. For example, the land laws in force upon the public domain in the mainland would be wholly inapt in Hawaii. There is need of change in the land laws of the Territory, but such changes must be made in conformity with the conditions there.

Formerly it was supposed that sugar was the only agricultural crop, but more recently it is found that many other products can be profitably raised, such as coffee, tobacco, rubber, pineapples, and sisal. The sugar plantations have been large in area, and until recently the small landholdings were not encouraged and were not profitable, but with the diversity in agricultural products a modification of the system of landholding will necessarily follow.

In order to deal wisely with the land question, the governor of Hawaii appointed a commission to study and report upon land conditions and make recommendation for needed changes. It is earnestly hoped that a system will be adopted under which farms may be acquired of small acreage, similar to the homestead on the mainland, so that ultimately the land will be cultivated by many owners instead of by tenants alone. Such a change does not involve the destruction of the sugar plantations, as was feared by some, but will increase the area of arable land and permit the use of lands for the crops which will be most profitable.

In this connection I have had Mr. Newell, the director of the Reclamation Service, make a thorough personal examination of the land and water conditions in the islands for the purpose of considering a plan for the reclamation of lands which can not now be cultivated because of the lack of water.

The water conditions in Hawaii are phenomenal. It is generally supposed that the rainfall throughout the islands is excessive. This is true in localities, but there are thousands of acres where irrigation is as necessary as in the arid districts of the West.

The Federal Government should treat Hawaii as it does the mainland, giving its people the advantage of all the work which is being carried on by the Departments of Agriculture and the Interior in the study and development of its agricultural possibilities.

Directly connected with the land and agricultural problems is the question of labor. Since cutting off the supply of Asiatic labor means must be taken to provide for the substitution of that labor, as it is required, with labor from the mainland or Europe. There is the heartiest cooperation between the sugar planters, now the large employers of labor, and the Federal Government in working out this difficult problem.

The transportation interests of the Territory deserve our most careful consideration. The success of increasing and diversifying the agricultural products of the islands depends upon proper transportation facilities by water. One harbor, at least, upon each island should be provided so that the products of that island may be shipped directly to the markets of the world. Congress has directed the beginning of this work, but further appropriations should be made immediately available. The ultimate commercial development of our trade with

the Orient is directly connected with proper provisions for ocean transportation with the islands.

The general conditions of the Territory are admirable. Educational work is given thorough attention. School conditions in the islands are most unusual. In the same school there are often represented more than a dozen different races. The school courses are thoroughly practical, especial attention being given to industrial courses.

Owing to the existence of leprosy, the problems affecting the public health have received careful attention. There has been the closest cooperation between the local authorities and the federal service, but both authorities feel the need of certain changes in the law, which have been presented to Congress, the purpose of which is to give greater authority to the health authorities to take necessary protective measures to prevent the introduction and spread of contagious diseases. The importance of this legislation can not be overestimated, because of the enormous number of travelers to and from the Orient who enter or pass through the port of Honolulu.

PORTO RICO.

The report of the governor of Porto Rico, with the accompanying reports of other territorial officers, have been transmitted to the President through the Secretary of State for submission to Congress, as required by law.

Under the act creating the government of Porto Rico, the reports by the governor and other officers are transmitted to different departments of the Federal Government. It would be better, for purposes of administration, if the Territory were placed by law, as the other Territories, under the jurisdiction of the Interior Department.

The affairs of the Territory have been well administered. I call particular attention to the reports of the various executive officers. The educational, political, and industrial conditions of the island are better than ever before in its history.

GUAM AND SAMOA.

The naval officers who act as governors of Guam and Samoa have submitted their reports to the Secretary of the Navy, as required by law.

Under instructions from the Secretary of the Navy, a special board of naval officers made a thorough investigation of the conditions on the island of Guam. The report of that board is full of interest. It shows that the conditions upon the island are good, and makes certain recommendations for improvement, which will be carried out so far as the law permits. If legislation be necessary, a special report will be submitted.

NATIONAL PARKS AND RESERVATIONS.

The national parks under the jurisdiction of the department are as follows:

	Acres.
Yellowstone, in Wyoming	2,142,720.00
Yosemite, in California	719,622.00
Sequoia, in California	161,597.00
General Grant, in California	2,536.00
Mount Rainier, in Washington	207,360.00
Crater Lake, in Oregon	159,360.00
Wind Cave, in South Dakota	10,522.00
Sullys Hill, in North Dakota	780.00
Platt, in Oklahoma	848.22
Casa Grande Ruins, in Arizona	480.00
Mesa Verde, in Colorado	42,376.00
(5-mile strip for protection of ruins)	175,360.00
Hot Springs Reservation, in Arkansas	911.63

Another year's experience in the administration of these parks confirms my belief that all of them except the Hot Springs Reservation, in Arkansas, should be transferred to the Forest Service, under the Department of Agriculture, where they could be better handled in connection with the national forests. These parks can be better protected by forest rangers and scouts than by United States troops, and while the organization of such a body in the first instance would mean an additional appropriation, yet in the end it would prove an economy. The appropriations for the construction of roads in the Yellowstone and Mount Rainier parks should be transferred to the department which has immediate charge of these parks.

HOT SPRINGS RESERVATION.

The condition of affairs at Hot Springs, Ark., is greatly improved. This is largely attributable to the passage of state laws which eliminated from Hot Springs a very undesirable class of persons, thereby making the city much more attractive.

The number of baths given by the 24 bath houses aggregated 703,854, and the amount paid for the same was $197,235.70. The total number of baths given by the bath houses and the government free bath house was 898,004. The number of visitors was greater than in any previous year.

There was received during the year from water and ground rents $28,090, which, with a balance on June 30, 1907, of $7,421.09, made the total amount available for use on the reservation $35,511.09. The expenditures during the year were $21,008.78, leaving a balance on July 1, 1908, of $14,502.31.

Many desirable improvements were made on the reservation during the year to add to its attractiveness and protection. The bathing facilities of the government free bath house have been largely increased by the construction of large pools, and it now can afford bathing to 900 persons daily. The law providing for "maintenance of free baths for the invalid poor of the United States" has been carefully carried out. During the year 7,191 diseased, crippled, or afflicted persons were admitted, 69.5 per cent being white and 30.5 per cent colored. About one-tenth of the number of males were veterans of the civil war. The total number of baths given at the free bath house was 184,150.

The attention of Congress is called to the act of March 3, 1891, under which bath houses on the reservation were not required to pay anything except a stipulated price per tub for the hot water. At that period land in Hot Springs was of very little value, and the amount realized by the bath-house owners on their investment was very small. For many years the bath houses have made large profits, and the land on which their buildings stand has a value of several hundred dollars a front foot. I believe it to be only fair to the Government, as well as to the owners of bath houses off the government reservation (14 out of 24), that those situated on the reservation should pay a ground rent to the Government for the land occupied. I recommend that the law of March 3, 1891, be amended so as to provide that all leases of bath houses on the government reservation shall be required to pay a ground rent, to be fixed by the Secretary of the Interior.

I am having careful investigation made of the general conditions on the reservation, believing that there is need of some changes in the present methods of administration.

I have no doubt that ultimately the Federal Government should build a new bath house. I believe the present one to be not only inadequate, but insanitary, and if we are to continue supplying a place for free public baths, that place should be supplied with all necessary conveniences.

THE PRESERVATION OF AMERICAN ANTIQUITIES.

Under the authority of the act approved June 8, 1906, the President, by formal proclamation, has created out of the public and unreserved lands nine national monuments, in the order of creation as follows:

National monuments created out of public lands.

Name.	State.	Date.	Area.
			Acres.
Devils Tower	Wyoming	Sept. 24, 1906	1,152
Montezuma Castle	Arizona	Dec. 8, 1906	160
Petrified Forest	do	do	60,776
El Morro	New Mexico	do	160
Chaco Canyon	do	Mar. 11, 1907	20,520
Muir Woods	California	Jan. 9, 1908	295
Natural Bridges	Utah	Apr. 16, 1908	120
Lewis and Clark Cavern	Montana	May 11, 1908	160
Tumacacori	Arizona	Sept. 15, 1908	10

Out of the reserved forest lands national monuments have been created as follows:

National monuments created out of reserved forest lands.

Name.	State.	Date.	Area.
			Acres.
Cinder Cone	California	May 6, 1907	5,120
Lassen Peak	do	do	1,280
Gila Cliff Dwellings	New Mexico	Nov. 16, 1907	160
Tonto	Arizona	Dec. 19, 1907	640
Grand Canyon	do	Jan. 11, 1908	818,560
Pinnacles	California	Jan. 16, 1908	2,080
Jewel Cave	South Dakota	Feb. 7, 1908	1,280

BIRD RESERVES.

Reservations for the protection of native wild birds have been created by executive order as follows:

Bird reserves created.

Name of reservation.	Date.	Location.	Area.
			Acres.
Pelican Island	Mar. 14, 1903	East Florida coast	*5.50
Breton Islands	Oct. 4, 1904	Southeast coast of Louisiana	Unknown.
Stump Lake	Mar. 9, 1905	North Dakota	27.39
Huron Islands	Oct. 10, 1906	Lake Superior, Michigan	Unknown.
Siskiwit Islands	do	do	Do.
Passage Key	do	Tampa Bay, Florida	36.37
Indian Key	Feb. 10, 1906	do	90.00
Tern Islands	Aug. 8, 1907	Mouths of Mississippi River, Louisiana.	Unknown.
Shell Keys	Aug. 17, 1907	South Louisiana coast	Do.
Three Arch Rocks	Oct. 14, 1907	West Oregon coast	Do.
Flattery Rocks	Oct. 23, 1907	West Washington coast	Do.
Quillayute Needles	do	do	Do.
Copalis Rock	do	do	Do.
East Timbalier Island	Dec. 17, 1907	South Louisiana coast	Do.
Mosquito Inlet	Feb. 24, 1908	East Florida coast	Do.
Tortugas Keys	Apr. 6, 1908	Florida Keys, Florida	Do.

* About.

The following nine reservations have been created since June 30, 1908, the close of the last fiscal year:

Bird reservations created since June 30, 1908.

Name of reservation.	Date.	Location.	Area.
Klamath Lake	Aug. 8,1908	Oregon and California	Unknown.
Key West	----do----	Florida Keys, Florida	Do.
Lake Malheur	Aug. 18,1908	Oregon	Do.
Chase Lake	Aug. 28,1908	North Dakota	Do.
Pine Island	Sept.15,1908	West Florida coast	Do.
Matlacha Pass	Sept.26,1908	----do----	Do.
Palma Sola	----do----	----do----	Do.
Island Bay	Oct. 23,1908	Florida	Do.
Loch Katrina	Oct. 26,1908	Wyoming	Do.

ELEEMOSYNARY INSTITUTIONS.

GOVERNMENT HOSPITAL FOR THE INSANE.

There were in the hospital on June 30, 1908, 2,733 patients, an increase of 137 over the preceding year; the daily average for the fiscal year ended June 30, 1908, was 2,664, an increase of 95 over 1907. During the year there were admitted 643 patients, an increase of 24 over the previous year, making a total of 3,239 patients under treatment during the year. Of the total number admitted, 342 were from civil life and 301 from the army, the navy, and the Public Health and Marine-Hospital Service.

The problem of the future expansion of the hospital must soon receive consideration. In 1900, when the preliminary appropriation was made for plans for an extension to the hospital to accommodate 1,000 additional patients, the number of persons under treatment in the institution was 2,076; and in his annual report for that year the superintendent stated that the institution as it then existed would accommodate comfortably not exceeding 1,600 patients, with the necessary employees. The 1,000 additional beds for which the extension was built are now all occupied, and within the past few months it has been necessary to put additional beds in other quarters of the hospital. The annual increase of population of the hospital is estimated at 100. The time has arrived, therefore, when a broad policy should be adopted which is to govern the future development of the institution. The superintendent estimates that 100 acres more land are required for the hospital.

The improvements during the year included the remodeling of the East Lodge building as a home for male nurses; new plumbing in the main building; completion of the fireproof system, involving the installation of 185 fireproof doors; the purchase of a steam fire engine; installing a steam sterilizer in the laundry; fitting up a recitation

room for the training school for nurses; and installing a circulating library of 3,000 volumes for the use of the patients.

The training school graduated 17 nurses, of whom 12 were women and 5 were men. This is hardly sufficient to meet the requirements of the hospital. The placing of female nurses in charge of male wards has proved a success and has been extended.

The scientific departments of the hospital have been active, and during the year 15 publications have been issued, besides several others which are still under preparation.

FREEDMEN'S HOSPITAL.

The number of patients treated in this institution during the year was 2,823, of whom 1,964 were residents of the District of Columbia, and 859 were admitted from various States. The number discharged was 2,692, of whom 1,624 recovered, 632 were improved, 113 were unimproved, 36 were not treated, and 287 died. The number remaining in the hospital at the close of the year was 131. The greatest increase in the work was in the surgical department, where 1,005 operations were performed. In the out-patient department 5,019 persons were treated.

The new Freedmen's Hospital building was completed in February of 1908, and 129 patients were transferred thereto on February 26 without mishap.

The hospital is now in a position to receive pay patients; at present, however, the law makes no provision therefor. The enactment of legislation authorizing the admission of persons who are able to pay for treatment would inure to the benefit both of the institution and of a class of patients who do not receive treatment there under present conditions.

The appropriation of $25,500 made by the act of March 2, 1907, for the care and treatment in the Freedmen's Hospital of indigent patients belonging to the District of Columbia, under a contract to be made by the Board of Charities, was not sufficient to pay for the 1,964 patients admitted from said District at the rates fixed by the contract, to wit, $1.10 per day for adults, 65 cents per day for children, and 40 cents per day for babies; nor has the appropriation been sufficient during the past three years to pay for the number of patients admitted at the prices fixed by the contract, the total amount of deficiency for the three years being $32,379.10. Future estimates for payments to the hospital for the care and treatment of these indigent patients from the District of Columbia should be based upon the number of such persons treated during the previous year at contract rates.

An appropriation for a nurses' home is urgently needed; also for fencing and grading the hospital grounds.

The work of the training school for nurses has been excellent. Appointments are limited to those possessing certain physical qualifications, together with a liberal education. The number graduated during the year was 13, an increase of 1 over the preceding year.

HOWARD UNIVERSITY.

The number of students in attendance during the year aggregated 1,091, who came from 34 States and Territories, from Porto Rico, and from the following foreign countries: Africa, British West Indies, Canada, Republic of Panama, South America, Santo Domingo, Haiti, West Indies, and India. Of these 128 graduated from the several departments of the university. Satisfactory progress has been made in all departments.

The appropriations made by Congress for the past fiscal year were as follows: For salaries of officers, teachers, etc., $40,000; manual training department, $8,000; law and general library, $1,500; improvements and repairs to buildings and grounds, $7,000; fuel and light, $3,000; chemical and other apparatus, $200; total, $59,700. All of the above amounts, on June 30, 1908, were expended or under contract.

The total receipts for the year, including federal appropriations and funds from all other sources, were $155,815.21; disbursements, $146,520.75, leaving a balance of $9,294.46. The total of the general endowment and special funds on June 30, 1908, was $175,356.45, of which amount $173,170 represents cash invested.

The completion of the new Freedmen's Hospital, built by the Government on a tract of land adjoining the institution, aggregating 11 acres, leased from the Howard University for the purpose, will give the school of medicine exceptionally fine clinical facilities.

COLUMBIA INSTITUTION FOR THE DEAF AND DUMB.

The number of students and pupils remaining in the institution July 1, 1907, was 115; admitted during the year, 39; since admitted, 42; total, 196, of which 113 were males and 83 females. Of these, 140 have been in the collegiate department, representing 35 States, the District of Columbia, Canada, and Scotland, and of the 56 in the primary department, 38 were admitted as beneficiaries of the District of Columbia. During the fiscal year 28 were discharged from the institution by graduation and otherwise. In addition to the foregoing, 17 colored deaf-mutes belonging to the District of Columbia have, under the act of March 3, 1905, been admitted through this institution to the Maryland School for Colored Deaf-mutes. General good health has prevailed among the students and pupils.

The receipts of the institution from all sources amounted to $82,735.13, of which amount $73,000 was appropriated by Congress for general support and $5,000 for special repairs, and $4,735.13 was

received from private sources for board, tuition, etc. The expenditures were $76,959.68 for current expenses and $5,000 for special repairs, leaving an unexpended balance of $775.45.

MARYLAND SCHOOL FOR THE BLIND.

The number of United States beneficiaries remaining at the Maryland School for the Blind on June 30, 1907, was 17, since which time 6 have been admitted and 2 discharged, leaving 21 beneficiaries at the institution on June 30, 1908.

The total amount expended during the year ended June 30, 1907, for the care and maintenance of indigent blind children of the District of Columbia was $5,475. The total amount expended for the fiscal year ended June 30, 1908, was $6,150, half of which amounts was paid from the revenues of the District of Columbia and the other half out of the Treasury of the United States, pursuant to the act of Congress approved March 3, 1899 (30 Stats., 1101).

The act of May 26, 1908 (35 Stats., 295), making appropriations for the District of Columbia, provided that after July 1, 1908, a contract should be entered into by the Commissioners of the District of Columbia for the instruction, in Maryland or some other State, of indigent blind children of the District, for which purpose an appropriation of $6,000 was made, repealing the permanent indefinite annual appropriation in section 3869 of the Revised Statutes. Inasmuch as the Secretary, by section 2 of the act of May 29, 1858 (11 Stats., 293), was also charged with providing for the instruction of the blind children of all persons in the military and naval service of the United States while such persons are actually in such service, the expense to be defrayed from the permanent indefinite annual appropriation above referred to, the question was submitted to the Comptroller of the Treasury as to whether that appropriation was repealed so far as to be no longer available for the instruction of this class of beneficiaries. In an opinion rendered October 27, 1908, the Comptroller held that the act of May 26, 1908, supra, only repealed the provisions of section 3689 of the Revised Statutes to the extent that said section provides for the education of the blind children of the District of Columbia, and that the permanent indefinite annual appropriation in question is therefore still available for instructing the blind children of all persons in the military and naval service of the United States, in some institution in Maryland or some other State, and that the Secretary is authorized to continue to issue permits for the instruction of such children.

WASHINGTON HOSPITAL FOR FOUNDLINGS.

Fifty-four children were cared for during the year, of whom 32 remained from the preceding year. There were 4 adoptions during the year, 4 children were returned to relatives or friends, 2 were transferred to other institutions, and 17 died. Twenty-seven children remained in the institution on June 30, 1908.

The daily average of children was 28. Since the hospital was established 277 of its children have been adopted into private homes.

The expenses of the institution are about $8,000 a year. The appropriation made by Congress toward the support of its inmates for the current year amounts to $5,400, and the board of directors recommends that the appropriation for the fiscal year ending June 30. 1910, be increased to $6,000.

In the act of May 26, 1908 (35 Stat. L., 512), the Board of Charities of the District of Columbia is authorized to provide for the care and maintenance of children under contract with the Washington Hospital for Foundlings. As this department has nothing whatever to do with the administration of this institution, and as the maintenance of its inmates is provided for by contract between the institution and the Board of Charities of the District of Columbia, I renew the recommendation contained in my last annual report that the organic act of the institution be so amended as to require it to report to the Commissioners of the District of Columbia instead of to the Secretary of the Interior.

THE SUPERINTENDENT OF THE UNITED STATES CAPITOL BUILDING AND GROUNDS.

In January of the present year the House Office Building was near enough completed to permit the occupancy of the rooms by the Members of the House, and the rooms were accordingly distributed among the Members by lot and were occupied during the remainder of the session.

The construction of the Senate Office Building is also progressing satisfactorily, and it is expected that the office suites in this building can be occupied during the present session of Congress.

Arrangements have been completed to enter the final stages of construction of the heating, lighting, and power plant for the Capitol and congressional buildings, and some portions of the plant will probably be available for service during the present session of Congress.

GENERAL EDUCATION BOARD.

On June 30, 1908, the capital account amounted to $38,313,100.29, as against $42,717,260.21 at the close of the preceding year, the difference, amounting to $4,404,159.92, having been contributed during the year to educational and scientific institutions. The capital was invested as follows: Railroad bonds, $18,839,850.48; industrial bonds, $8,142,957.84; railroad stocks, $8,883,340.89; industrial stocks, $2,278,541.76; and the amount of cash in bank was $168,409.32.

The moneys received under the general income account during the year amounted to $3,087,921.40, of which $980,139.31 represented balance from previous year. The disbursements, consisting of gifts to

large number of educational institutions, amounted to $643,526.19. The sum of $2,222,666.64 was invested in securities, administrative expenses amounted to $31,043.56, and the cash on hand at the close of the year was $190,685.01.

The aggregate amount of pledges to numerous educational institutions throughout the United States is $2,227,171.03.

There is a special fund known as the "Anna T. Jeanes" fund for negro rural schools, amounting to $200,000. The income during the year, including a balance of $6,254.54 from preceding year, amounted to $15,447.51. The sum of $13,643.79 was distributed to various negro schools during the year, $195.59 was devoted to administrative expenses, and there was a balance in bank at the close of the year of $1,608.13.

DISTRICT OF COLUMBIA CORPORATIONS.

In my last annual report attention was called to the fact that the Washington and Georgetown Railroad Company, the Washington Gas Light Company, and the Columbia Railway Company of the District of Columbia had no connection with the Interior Department, and it was recommended that so much of the several acts as imposed duties upon the Secretary of the Interior be repealed or modified so as to devolve the duties required by said acts upon the Commissioners of the District of Columbia, and to provide that the reports required be made direct to Congress. I renew this recommendation and urge favorable consideration thereof.

THE MARITIME CANAL COMPANY OF NICARAGUA.

Section 6 of the act of Congress approved February 20, 1889, entitled "An act to incorporate the Maritime Canal Company of Nicaragua" (25 Stat. L., 675), provides:

> Said company shall make a report on the first Monday of December in each year to the Secretary of the Interior, which shall be duly verified on oath by the president and secretary thereof, giving such detailed statement of its affairs, and of its assets and liabilities, as may be required by the Secretary of the Interior, and any willfully false statement so made shall be deemed perjury, and punishable as such. And it shall be the duty of the Secretary of the Interior to require such annual statement and to prescribe the form thereof and the particulars to be given thereby.

The report of this corporation was submitted to Congress on December 7, 1908.

I refer to the annual reports of the chiefs of the various bureaus and offices for detailed information about their work.

Very respectfully,

JAMES RUDOLPH GARFIELD,
Secretary.

The PRESIDENT.

REPORT OF THE COMMISSIONER OF THE GENERAL LAND OFFICE.

REPORT OF THE COMMISSIONER OF THE GENERAL LAND OFFICE.

DEPARTMENT OF THE INTERIOR,
GENERAL LAND OFFICE,
Washington, D. C., September 16, 1908.

SIR: The following report of the work in the General Land Office for the fiscal year ended June 30, 1908, is respectfully submitted:

GENERAL STATEMENT.

The Hon. R. A. Ballinger, my immediate predecessor, resigned March 4, 1908. This report, therefore, in so far as it touches upon work accomplished during the past fiscal year, treats largely of that which was performed under his direction and in accordance with the systems which he adopted or initiated. It has been my endeavor to carry out the plans inaugurated by him and to make only such additional changes as good administration and further experience seemed to call for.

With the decrease in the area of the public domain there should be an increase in vigilance. With the great demand for homes the officials of the General Land Office recognize the importance of seeing that no one obtains a right to the land still remaining through unlawful methods. Every man who thus acquires title to a tract robs a law-abiding applicant of an opportunity to exercise his statutory right, and if the land be capable of producing crops deprives a seeker of his opportunity to gain a homestead, thus injuring the prosperity of the country; for the homesteader has built the West.

The importance of a well-equipped and carefully selected special agents' force has been thoroughly appreciated, and to effect this the reorganization of the field force has been carried out. Congress, realizing the accumulation of work which necessarily had to receive attention, appropriated the sum of $500,000 during the current year, $250,000 of which was for the purpose of bringing up this work of the General Land Office so as to make the same current, and was to be immediately available. The details, necessary in the organization

of this additional force, virtually occupied the time between the passage of the bill and June 30, so that the members of the additional force were not ready to assume their duties until after the 15th of June. At the beginning of the fiscal year, however, the additional force was engaged and at work in the field.

The field force has attained a high degree of efficiency, and is permanent in character. The public-land area is divided into thirteen field divisions, each of which has its permanent headquarters, with a chief agent in charge, who is also a bonded officer. The personnel of the different field corps is selected entirely upon consideration of the needs of the particular public-land area covered. The majority of the special agents are men who have long resided in the West and have had practical experience in stock raising, irrigation, farming, mining, surveying, civil engineering, or in the lumber camps. There are also in each division agents who are lawyers by profession and who give particular attention to the necessary legal questions involved in the work. The General Land Office is thus in close touch with every feature of the public-land situation, with adequate machinery to secure effective and prompt observance of the public-land laws and render aid to those who seek to establish a home or put to beneficial use any part of the public domain.

During the last fiscal year there were, on the average, 89 agents employed in the field. There have been collected upon agents' reports $67,902.39 for timber trespass; and $30,785.92 have been paid in as the result of suits instituted by the Department of Justice upon reports of special agents, making a total of $98,688.31 collected during the year. There have been referred to the Department of Justice, with recommendation that suit be brought, timber claims to the amount of $377,509.69. There were secured 234 indictments for fraud, which resulted in 63 convictions and 60 acquittals, the remaining cases not yet having been tried. Two thousand eight hundred and eighty-five entries were canceled because of adverse reports of special agents. Individual entries have areas of from 40 to 320 acres, and an average size is 160 acres, from which it appears that by reason of investigations by the field force there have been recovered from fraudulent entry, during the fiscal year 1907–8, a total of 383,600 acres. This is exclusive of the many relinquishments filed incident to investigations by special agents, of which an accurate account can not be made; they have been very numerous, however.

During the past fiscal year close attention has been paid the methods of doing business in the General Land Office, and to the personnel; many changes have been made.

A comparison of the work done during the year 1906–7 with that accomplished during the year 1907–8 is the best commentary on the new methods adopted, on the improved personnel of the force, and

on the greater interest taken by the employees. The following table of the most important branches of the work will be of interest:

Work of General Land Office in fiscal years 1907 and 1908.

	1907.	1908.	Per cent increase.
Hearings before registers and receivers	[a] 300	1,115	271
Reports received from special agents	3,903	8,700	122
Reports disposed of	3,399	[a] 9,500	179
Unlawful inclosures of public land reported	136	254	86
Acres restored (unlawful inclosures)	259,918	762,941	193
Timber depredations reported	278	480	72
Fraudulent entries disposed of	9,251	11,662	26
Fraudulent entry hearings ordered	304	1,486	372
Homestead and timber and stone entries approved for patent	40,538	58,209	43
State selections disposed of (acres)	818,014	2,404,973	194
Original desert entries examined	6,298	8,310	31
Final desert entries approved for patent	2,114	2,462	16
Indian allotments approved	7,195	10,117	40
Swamp indemnity approved (acres)	0	30,639	All
Swamp indemnity rejected (acres)	4,120	70,160	1,627
Lieu selections (act June 4, 1897) disposed of	478	1,269	165
Soldier's additional homestead applications disposed of	95	702	639
Mineral contests closed	215	365	70
Mineral hearings ordered	75	128	70
Mineral entries approved for patenting or cancellation	1,445	1,847	28
Coal entries approved or canceled	157	205	30
Hearings ordered	75	128	70
Private appealed (docket) cases decided [b]	1,223	1,462	19
Private unappealed cases decided [b]	5,590	8,816	58
Entries canceled [b]	5,146	8,042	56
Private land claims approved for patent	53	89	68
Small holding claims approved for patent	41	50	24
Lands in national forests restored to entry (acres)	49,335	204,514	314
Withdrawals and restorations of national forests examined	515	1,596	209
Report upon new forests proposed	108	137	27
Patents issued	45,978	90,522	97
Patents transmitted	47,185	95,331	102
Certified copies of records furnished	18,517	19,420	5
Maps, diagrams, etc., for official use	2,799	3,288	17
Determination of cases of coal entries	20,000	33,853	69
Letters received and recorded or answered without recording	262,693	300,532	14

[a] Approximately.

[b] In addition to the above work performed by the contest division during the past year, the contest work in the local offices was brought up to date, an arrearage of 2,232 cases in one office being cleared up. This work was accomplished through the temporary detail of employees, principally from this division, to duty in the local land offices.

This increase in work done was not due to any relaxation of care and vigilance on the part of this Office. Full compliance with the public-land laws was never more rigorously exacted than now. It is due to the inauguration of more modern business methods, the greater interest and activity shown by employees, and an improved personnel. In only one or two unimportant lines of work has there been any decrease; in all others, in addition to those shown in the above table, there has been a marked increase. This has been accomplished with practically no addition to the force. There were fourteen employees added to the force of the General Land Office upon the abandonment of the old Lands and Railroad Division in your office, some of whom were not here for the whole year; certain work done in your office was thereafter performed here. The entries under reclamation projects virtually caused a new branch of work, which would offset the assistance given by this additional force.

The showing made is exceptionally gratifying to the employees of this Bureau, the great majority of whom have worked with zeal and

intelligence in order to overtake, if possible, the accumulation of work. The result could not, however, have been achieved had it not been for the active interest which has been taken by you in the conduct of this Office, and the encouragement which you have lent to the inauguration of new methods and to the improvement of the personnel of the force.

CASH RECEIPTS.

The total cash receipts from the sales of public lands, including fees and commissions on both original and final entries for the fiscal year 1908, were $11,492,453.76.

Miscellaneous receipts from the sales of Indian lands, depredations on public lands, sales of Government property, copies of records and plats, and reclamation water-right charges were $1,223,255.70, making the aggregate total of cash receipts of this Bureau during the fiscal year 1908, $12,715,709.46, an increase over the fiscal year 1907 of $1,162,531.46.

The total expenses of district land offices for salaries and commissions of registers and receivers, incidental expenses, and expenses of depositing public moneys during the fiscal year ended June 30, 1908, were $842,112.45, an increase of $31,255.49. The aggregate expenditures and estimated liabilities of the public-land service, including expenses of district land offices, as stated, were $2,381,359.79, leaving a net surplus in the United States Treasury of $10,334,349.67.

AREA OF LAND ENTERED.

The total area of land originally entered during the fiscal year 1908 is 19,090,356.78 acres, a decrease of 1,907,209.80 acres, as compared with the area entered during the year 1907. The total area upon which final proof was made is 8,068,044.85 acres.

NEW SYSTEM OF KEEPING RECORDS AND ACCOUNTS IN DISTRICT LAND OFFICES.

One of the first points to which Commissioner Ballinger's attention was directed was the method of keeping records and accounts in district land offices. There were employed by you for this Office certain experts on business methods who, in conjunction with employees of this Bureau, made a thorough examination of the system in vogue. It was found unsatisfactory, and in accordance with your order, dated July 1, 1908, an entirely new system of keeping records and accounts in district land offices was put into effect on July 1, 1908.

The old practice of deferring the issuance of receipts for moneys paid in connection with the public lands until the applications, entries, or proofs were allowed or approved, was discontinued, and receipts for all moneys collectible by receivers of public moneys are now

issued to applicants and entrymen at the time the money is paid, without regard to the subsequent allowance or rejection of the applications, entries, or proofs. This method enables this Office to more thoroughly supervise and check receivers' accounts than was possible under the former system.

The separate series of entry numbers for the various classes of entries have been discontinued, and there is now only one series of numbers maintained at each district land office, under which all classes of entries are numbered in the order in which they are filed.

The old record books were entirely remodeled, and all unnecessary records eliminated. The new records are arranged for a complete and accurate record of all business transacted, and are far more economical from a standpoint of time and cost. All district land offices have also been furnished with modern up-to-date filing equipment and office supplies.

The returns and account blanks have all been revised and reduced in size to enable the local officers to prepare them on ordinary sized typewriting machines. All duplication of work, so far as practicable, has been eliminated, and the third section of the act approved March 2, 1895, that—

> The duplication of records and returns of registers and receivers to the General Land Office shall be prevented by such regulations as the Commissioner of the General Land Office, with the approval of the Secretary of the Interior, may make—

is now being complied with to the fullest extent possible. A total of 86 record books and blanks have been replaced by 16 new blanks.

During the past year the various application and entry blanks and other forms in use by this bureau were revised and, wherever possible, blanks and forms were consolidated and useless blanks eliminated. By the close watch of innumerable details in this respect it is already evident that the work done will show a marked improvement in final results.

The new system of records and accounts will save much time and labor, not only for the Government but for all persons having business before this bureau, and will enable the local officers to transmit their returns and accounts promptly without the delay incident to their preparation and transmission under the old method.

As a result of the changes made in the method of keeping records in the district land offices, the arrangement of the files and records in the General Land Office will be greatly improved.

SALARIES OF EMPLOYEES.

Of the recommendations with respect to increases in salary for positions in this bureau, made to Congress by my predecessor, only one was adopted, namely, that of the chief of the surveying division.

The arguments which prompted Congress to approve the recommendation in this instance apply more forcibly to the positions of chief law clerk, chief clerk, and equally as strongly to the positions of law clerks and law examiners on the board of law review, and to the chiefs of division. There is but little demand among law firms engaged in the practice of land law for the services of the lawyers from the General Land Office, owing to the fact that the principles of general law are largely applicable to land law; moreover, the aim of the General Land Office is to waive all technicalities possible; hence a good general practitioner is competent to handle a question in land law, although the converse does not necessarily hold. The General Land Office can not, therefore, submit to Congress, as a reason for an increase in salaries, the argument that there is outside competition for the services of its best law clerks. It is submitted, however, that such a basis for computation of salaries makes no just provision as a return for the legal skill and experience required in the proper discharge of the heavy responsibilities imposed upon these officers. The real value of the services performed should be the basis of estimate, computed on the importance of the work to the Government. Adequate salaries will prove in the end to be money savers.

There should be created the position of executive officer. The duties of the Commissioner and Assistant Commissioner are such that neither has adequate time to devote to the personnel of the Office, or to ascertain whether there is the proper equipoise in clerical help between the different divisions. The policy adopted, therefore, has been to divide the divisions under three main heads—adjudication, special service, and record—and to place at the head of each of these classes an officer who, without interfering with the actual handling of the cases within the jurisdiction of each division, shall yet keep close watch to see where one division can afford to part with clerks to help another division which is behind in its work, and to see that all work is given proper attention. The chief clerk of this Office is at the head of the record, the chief of the special service is the executive chief of the work under that head, while it has been necessary to give to a chief of one of the divisions the supervising of work under the head of adjudication, in addition to his own duties. The plan has so far worked well. I would urge upon Congress the necessity of meeting this situation by authorizing the appointment of an executive officer.

LEGISLATION.

The recommendations of my predecessor in regard to needed legislation are reiterated, especially those with reference to coal lands.

LANDS UNDER RECLAMATION PROJECTS.

Experience has proven that lands which are to be brought under an irrigation project should be withdrawn from all kinds of entry at the time of the announcement of the enterprise. Under the present law the lands are open to homestead entry immediately upon the declaration of the project. Compliance with the homestead law is thereafter necessary. The water can not be brought upon the lands for several years after the entries are made. Until the water is furnished, the desert character of the land precludes growing of crops to furnish means of sustenance for the settlers. Great hardships have resulted. At the time of the approval of the project the lands should be withdrawn from settlement and entry until the water is ready and then restored to entry in the manner now adopted in the case of Indian reservations.

A general withdrawal of this character would, in addition, not only operate to relieve the Reclamation Service from certain difficulties encountered in carrying out its work, where entries had already been made, but would also relieve this Office from greater difficulties arising from the adjustment of existing homestead entries to the farm units upon the opening of the lands after the completion of the project.

RIGHTS OF WAY.

Attention should be called to the necessity of legislation bringing together and harmonizing the various acts granting rights of way, for various purposes, over the public lands.

Bills have been introduced from time to time, as heretofore recommended, looking toward this end, but they have not yet resulted in the necessary relief from the difficulties arising in the administration of the various acts bearing upon this subject. Especially is legislation desirable looking toward the termination of rights that have been granted under such an act as that of March 3, 1891, sections 18 to 21 (26 Stat. L., 1095), granting rights of way for canal and ditch purposes. This act, like the railroad right-of-way act of March 3, 1875 (18 Stat. L., 482), grants an easement over public lands that can not be terminated for nonuser, without some declaration of forfeiture, either by Congress or by the courts.

In the case of the railroad right-of-way act, relief was granted by the act of June 26, 1906 (34 Stat. L., 482), declaring forfeited to the United States, with certain limitations, such rights of way where the proposed line of road had not then been constructed.

The necessity for this legislation arises from the accumulation of mere paper rights of way, that lie as a burden upon the public lands, which must first be removed before the Government or private individuals can assert rights that otherwise exist, to the public domain.

The history of the creation of any of our national forest reserves, or undertakings under the reclamation act, is full of illustrations along this line. To relieve the public domain of such charges as these, through proceedings in the courts, is at all times very expensive and attended with much delay.

Under your instructions an exhaustive examination is being made in the field of all rights of way for the purpose of ascertaining whether they have been put to the use for which they were granted.

ADMINISTRATIVE LAW.

For the purpose of the better enforcement of the laws already on the statute books the enactment of legislation covering the following subjects is earnestly recommended:

1. To punish persons who fraudulently obtain or attempt to obtain title to public lands, and for other purposes. The lack of any statute which specifically provides for the punishment of persons who fraudulently obtain or attempt to obtain title to public lands embarrasses the proper adminstration of the public-land laws. Heretofore such offenses have been prosecuted under the statute punishing conspiracy to defraud the Government and under the laws prescribing penalties for perjury and subornation of perjury. It is often difficult, if not impossible, to prove either a conspiracy or subornation, and many cases are now pending, and others will arise, where the need for a more comprehensive statute than we now have is very urgent. Also there is not any statute which authorizes the punishment of an attempt to fraudulently acquire title.

2. To empower officers, clerks, inspectors, agents, and employees to administer oaths, and for other purposes. There is not now any statute sufficiently comprehensive to meet the needs indicated by caption of this paragraph. Section 183, Revised Statutes of the United States, provides that any officer or clerk of this Department detailed to investigate frauds against the Government or irregularities or misconduct on the part of its officers shall be authorized to administer oaths, and the question is likely to arise as to whether any officer who is not especially detailed to the duty of investigating particular cases has the power to administer an oath. Again, it is proposed to provide a method by which the special agents of this Office can compel witnesses to appear before judges or clerks of courts, United States commissioners, or registers and receivers and disclose the facts of their knowledge relative to any matter under investigation.

Sections 184, 185, and 186, Revised Statutes of the United States, and the act of July 25, 1882 (22 Stat. L., 175), authorize a proceeding of this kind in all cases where the fraudulent character of claims or pensions is under investigation, but there is no statute which in any way enables this Office to compel the disclosure of material testimony in advance of an investigation before the grand jury or trial before United States land officers or courts. The lack of this power often results in mistrials, because of the unwillingness of persons having knowledge of pertinent facts to disclose that knowledge until they are produced as witnesses before the grand jury or at the trial. This leads to the accumulation of unnecessary and burdensome cost to the Government, and greatly weakens the administration of the law. It is not seen why officers charged with the detection, investigation, and punishment of persons who attempt to defraud the Government through the acquisition of public lands should not be given the same powers which Congress has heretofore given to special agents who are charged with the investigation of pension frauds which often involve small amounts of money.

3. To amend an act providing for the compulsory attendance of witnesses before registers and receivers of land offices. The act of January 31, 1903, authorizes the compulsory attendance of witnesses in trials affecting public lands. In construing this act the Comptroller of the Treasury has so limited its provisions that it is impossible to compel the attendance of a witness at a hearing held outside of the county in which he is subpœnaed. The enforcement of the act, as thus construed, necessitates the taking of testimony in as many different places as there are witnesses residing in different counties. This imposes much additional and unnecessary cost, and the expenditure of a large amount of unnecessary time by the agents charged with the duty of examining the witnesses. At present the Government must in each trial case ask for hearings before an officer in each county in which its witnesses may reside, and a special agent must attend each of such hearings or depend upon depositions taken in his absence. This practice also results in the Government disclosing all its evidence in the case prior to the final hearing and enables the defendant to put his witnesses on the stand knowing exactly what he must disprove. An amendment should be adopted which will authorize the summoning of a witness residing in any given land district to appear before the local office. It can not be said that it will work an unnecessary hardship or impose an unusual burden upon the witnesses, since, under the act to be amended, the witness is to receive, in advance of his attendance, his fee for one day's attendance and his mileage fees before he can be compelled to attend.

4. To provide for the punishment of officers who attach false jurats or certificates to affidavits, or papers, and for other purposes. The

administration of the public-land laws calls, at almost every turn, for the establishment of essential facts. These facts can, in most instances, be established only through the affidavits of the applicants, yet there is no Federal statute which safeguards the execution of affidavits or compels an honest performance on the part of the officers before whom they are executed. A designing or unscrupulous officer may, with impunity, attach a false jurat by certifying that the affiant was personally known to him, when, in fact, he did not know him, or that the witness appeared before him and was sworn to his affidavit by him, when, in fact, he did not appear. Many cases have arisen in connection with the public-land laws in which the affiant named in the affidavit was impersonated, and others have arisen in which the jurat was attached without any oath having been administered. Where witnesses are impersonated it is practically impossible to identify the impersonator, and when no oath is administered it is impossible to sustain an indictment for perjury.

The passage of these bills is especially essential to the proper administration of the public-land laws, and it is urged with emphasis that they be enacted.

PLATS DESTROYED BY FIRE.

The appropriation made by Congress for the transcribing of the field notes and tract books destroyed in the San Francisco fire lapsed on the 31st of December last. I now find that no provision was made in this appropriation for the copying of the plats of mineral surveys, so that the surveyor-general has to make exhaustive researches in the field notes for the purposes of ascertaining conflicts in proposed mineral surveys. This necessitates great additional labor and cost. I recommend, therefore, than an appropriation of $8,000 be asked from Congress to make the necessary transcripts.

UNDELIVERED PATENTS.

There are now in the general and local land offices some 400,000 patents to lands which it has not been possible to deliver to entry men. In these cases the successful applicant has been satisfied to record the receiver's receipt and has then for some reason ceased to call for mail at his last known address, to which the notice of the issuance of the patent is sent. Some steps should be taken to have these muniments of title properly recorded. In many instances the patents are for lands in States in which all the public lands have been exhausted for a number of years, such as Indiana, Ohio, Illinois. The attention of the governing bodies of the States is called to this condition of affairs, in order that proper steps be taken for the recording of these patents. This office has adopted a regulation in regard

to the delivery of these old patents which works well and which is designed to prevent the practice of any extortion. The patents are transmitted to the recorder of deeds or other proper county official for record upon receipt of a statement from him that the money necessary to pay for recording has been deposited with him by any person interested.

SURVEYS.

I repeat the recommendation made by my predecessor that authority should be given to the Secretary of the Interior to cause the surveying of the public lands to be made by surveyors directly under his charge in addition to the contract system. In many States the remaining unsurveyed lands are those which are difficult of access and of survey. Under the contract system it is found that the work is undertaken by deputies who have not fully advised themselves of the difficulties ahead of them and who, in consequence, default or are very backward in the completion of their contracts, causing vexatious delays in the administration of public-land matters. It is an admitted fact that hundreds of thousands of dollars will have to be expended in resurveys, owing to paper surveys made and paid for prior to the date of our inspection system. The contract system is not, even under inspection, entirely satisfactory, and the authority asked for ought to be given the Secretary.

In further support of my position I would respectfully submit the following excerpts from a letter received from one of the most competent surveyors-general now in the service:

As is generally understood by those familiar with the matter the present system is cumbersome and in many ways unsatisfactory. The great length of time consumed between the receipt by this office of a settler's application for the survey of his land and the date when he is at liberty to make his entry is a discouragement to the homesteader, and the constant inquiries and criticisms received by this office are an annoyance and it is often difficult to give a reason for such seemingly unnecessary delay that is satisfactory to the one making such inquiry.

The most practical way of relieving this condition appears to be the appointment, by your office for each district, of a corps of competent surveyors on salary who should be placed under the direction of the surveyor-general of such surveying district. In this way the necessity of an examination of the field work would be dispensed with, thus doing away with that much delay and expense. The present system has reached a stage where it is almost impossible to secure good men to do the work. The lowest bidders are as a rule men of little experience who through ignorance submit bids that encourage hasty and erratic work and necessitating in most cases the delay of returning the deputy to the field to make corrections.

This office is constantly in receipt of communications from settlers protesting against the erratic and fraudulent surveys of townships made under contracts dating back many years. Sooner or later these townships will have to be resurveyed, and in case the work is undertaken by the Government I would particularly recommend that on account of the great amount of preliminary surveying necessary, the work be done by men of known ability selected by your office, or this office, to be paid per diem or a monthly salary.

WITHDRAWAL OF IRRIGABLE ARID LANDS.

An intelligent and economic disposal of the remaining public lands demands that every acre shall be preserved for its greatest use. The policy of Congress has been to offer homes on the lands to those who are anxious to obtain them. As long as lands can be found capable of producing crops the way is plain. The reclamation act, so called, showed the evident intent of Congress to continue the policy of providing the greatest number of homes possible on the public domain. The logical sequence is to take the necessary steps to hold irrigable lands, which without water can not furnish homes, for future irrigation.

No more important work for the general welfare is now being done than that performed under the act of June 17, 1902. Successful irrigation works have also been inaugurated under the Carey Act and great general good has resulted therefrom. It is to the manifest advantage, therefore, of the people of the United States that everything possible be done to further the reclamation of the public lands. The result of successful irrigation and its effect on values is well known. An acre of land of no prior value speedily reaches a price of from $100 and up after water has been successfully brought upon it. This knowledge has introduced a new character of speculation, to prevent which there is no law on the statute books. Land of no present value for farming or other purposes is taken simply in the hope that the increasing demand and consequent higher values for irrigated land will bring the tract within an irrigation project. So it is that when an irrigation project is initiated it is found that a large proportion of the area is either entered or in private ownership and held in tracts of 160 acres or larger, though the land without water is incapable of growing crops. Thus the true purport of the act of 1902, namely, the furnishing of homes for the landless settler on tracts of a size capable of providing a living and reasonable competency for the average family, is defeated. Practical experience shows that 80 acres with water is the maximum unit a family requires in intensive farming. When the land is already held in tracts of 160 acres, there is only one home, where two or more homes ought to be established. The result is the additional homes are secured only by paying a fancy price to the speculator, and the object of the reclamation act is to that extent defeated.

A similar difficulty confronts the States under the Carey Act. As soon as a project is understood to be under way claimants under the desert-land and other acts flock to the spot. The land is thus entered and the Carey Act applicants necessarily abandon the project or pay the speculators to vacate.

The proper step to take would be to classify the lands of the United States in order to ascertain what public lands (which in their present

condition are incapable of affording a home) are susceptible of irrigation up to a cost even much greater than that now entertained by the Reclamation Service, and to withdraw these lands from entry awaiting the time when they can by irrigation be made homes either under the United States Government or under the Carey Act. It will be only a comparatively few years before an irrigation project which will cost as high as $200 an acre will be considered practicable, the market for the land justifying such an expenditure. No one can be hurt by such a withdrawal, for desert land which can not be reclaimed by the individual effort of a settler can never become a home until water is brought to it by the Government, State, or by the expenditure of vast sums by private enterprise.

The cost of classification would not be very great and the benefits conferred in preserving the lands for actual homes, until such time as reclamation may be had, would far outweigh the immediate expenses.

RESTORATION OF LANDS TO ENTRY.

A law should be enacted governing restorations of all lands to entry, which would authorize the adoption of a method similar to that now in use in opening ceded lands on Indian reserves. This has been found to be very successful in its administration and gives an equal opportunity to all applicants, of either sex, and to the weak and the strong alike. Regulations have been adopted with a view to giving home seekers equal opportunities, but it has been impossible under the limited authority vested in the Secretary of the Interior to reach a satisfactory solution. There is a House bill pending on this question which should become a law.

REGISTERS AND RECEIVERS.

A careful examination into the land offices of the United States furnishes convincing proof that no one should be appointed register unless he has the necessary legal qualifications, and no one should be given the position of receiver unless he be a competent accountant and business man. The duties of register and receiver, to be properly filled, demand the entire attention of competent men, and it is unjust to the general public to appoint to these positions men who do not possess the technical qualifications demanded by the duties they are called upon to perform.

It has been found absolutely necessary to have furnished complete transcripts of the tract books in at least two land offices. This is owing to the inefficient manner in which the books have been kept, and furnishes a strong argument in favor of seeing that none but competent officers are appointed. The work will have to be done during the present year and will cost the Government at least $10,000.

CALIFORNIA SCHOOL GRANT.

During the year 1903 it was ascertained from a thorough examination of the California school grant that the State had selected approximately 40,000 acres of school indemnity lands for which no valid bases had been assigned. Demands were accordingly made upon the State for valid bases, and while the State at first acknowledged the justice of the Government's claim, no substantial effort was made to furnish such valid base, and after considerable correspondence the matter was the subject of a conference during the past year between officers of the State and representatives of the Department and this Office. At that conference an agreement was reached which was regarded as satisfactory to the State and at the same time as a substantial compliance with the Government's demands.

This Office proceeded to prepare statements showing in detail the certifications in which no valid bases had been assigned, and in due time submitted the same to the officers of the State; but the State claimed that there was a misunderstanding as to the terms of the agreement, and the surveyor-general again appeared before the Department and represented that, under the laws and regulations governing the conduct of his office, he could assign bases only for such excess certifications as had occurred since the passage of the act of March 1, 1877 (19 Stat. L., 267).

Under the circumstances the Department, on May 12, 1908, advised the surveyor-general that, if valid bases were assigned for the excess certifications since 1877 (which amounted to more than 13,000 acres), the adjustment of the remaining excesses would be waived for the time being and that pending selections on valid bases (action on which has been suspended for several years) would be listed for approval.

While this Office has been assured by the State surveyor-general that patent would be issued to the United States for a sufficient quantity of land in the San Jacinto (now Cleveland) National Forest to indemnify the Government for the excess certifications which occurred since 1877, this Office has received no patent up to the present time, and, accordingly, action remains suspended on all the indemnity selections from the State of California.

However, it is hoped that the necessary action will be taken by the State in the near future, and there is reason to believe, moreover, that the legislature of the State will also provide means by which the Government may be indemnified for all of the excess certifications.

SURVEYORS-GENERAL.

A personal inspection of offices of surveyors-general reveals the fact that there is no uniformity of system in the method of performance of work—each office pursues that which seems best to itself. There is not in most offices any attempt at a cost system in the preparation of plats and in the performance of other work. Steps will be taken to elaborate a uniform system for all offices. The only adequate method of inspecting the work done in the various surveyor-generals offices is to follow a method similar to that adopted in local land offices, namely, an inspection by competent officials detailed from the General Land Office. In the case of surveyor-generals offices these officials should be either surveyors or skilled draftsmen with a knowledge of surveying. The result would be to bring the field offices and the General Land Office into a better understanding and closer touch.

INSPECTION OF LAND OFFICES.

It has been found that the system of inspection which has hitherto prevailed has been unsatisfactory. The inspectors, three in number, divided the territory between them, and being constantly on the road did not have an opportunity to become thoroughly versed in the methods of the head office. They did not afford a connecting link between the local land offices and the General Land Office. Under the law these officers are only paid the per diem in lieu of subsistence when actually traveling. It has been found the better practice, therefore, to appoint as inspectors competent law clerks of the General Land Office, whose services can be used when not on tour of inspection in the General Land Office in the adjudication of cases, and who are therefore more competent to adjust the affairs of the offices they visit from time to time. In addition clerks of the General Land Office have been detailed during the last fiscal year to assist in bringing the work in the local offices up to date with good results. In this way the officials of the local offices have had the benefit of more competent instructors and have learned what is desired by the General Land Office. Experience has taught that, as a result, the local land offices and the General Land Office have been brought closer together under this method, inasmuch as the persons who, to some extent, do the actual work in the offices, respectively, are brought into actual contact. In order, however, that there may be no confusion of duties, I would recommend that the positions of inspectors in the General Land Office be abolished and that three additional positions of law examiner be created.

INDEX OF PATENTS.

The law provides for the maintaining of an alphabetical list of all patents issued. For some reason no such list has been kept until the past year. Some years ago a card index by descriptions was installed of the lands disposed of in the States of Ohio, Indiana, and Illinois, which has been completed; and an index for the State of Iowa partially completed—a special appropriation having been made for that purpose; but an alphabetical index was not prepared in conjunction therewith. The force of the General Land Office is not sufficient to take up the back work, though it should be done. Your attention is called to this situation in order that you may consider the alternative of (1) asking for a special appropriation to perform this work, or (2) waiting until the work of the General Land Office shall have relaxed, and leaving this work to be done in future years.

BIRD RESERVATIONS.

Since March 13, 1903, 16 reservations for the protection of native birds have been created by Executive order, on recommendation of the Department, after a careful consideration and presentation of each case by this Bureau. These reserves have been created in response to a widespread popular and economic demand, made not only by the students of wild-bird life but also by the farmer and the sportsman and by a numerous and scattered citizenship, which, in a broad sense, is interested in conserving the nation's resources. No reserve has been created without securing, first, a full knowledge of ornithological conditions, and second, determining the character of the lands and their availability for bird reservation purposes. As a rule these lands are unfitted for agricultural, commercial, or defensive purposes, the exceptions being noted in the modified form of order issued.

For convenience the bird reserves may be placed in three general groups, viz, the Florida and Gulf coast reserves, the reserves in the Northern States and those in the Pacific coast States.

The first group embraces nine reservations: Pelican Island, Breton Islands, Passage Key, Indian Key, Tern Islands, Shell Keys, East Timbalier Island, Mosquito Inlet, and Tortugas Keys, which are scattered along the Atlantic and Gulf coasts from the middle of eastern Florida to western Louisiana. Upon these reserves thousands of many species of water birds nest, among which are brown pelicans, gulls and terns, black skimmers, cormorants, herons, etc.; and the Breton Island reserve, in addition, is the winter home of myriads of edible wild ducks.

The second group embraces three reservations: Stump Lake in North Dakota, and Huron Islands and Siskiwit Islands in Lake Superior, Michigan. Upon the Michigan reserves thousands of gulls and

terns, and in the North Dakota reserve Canada geese, wild ducks, white pelicans, gulls, terns, and shore birds breed.

The third group embraces four reservations: Three Arch Rocks, Flattery Rocks, Quillayute Needles, and Copalis Rocks, islands located off the coasts of Washington and Oregon. Upon the coast islands thousands of murres, cormorants, petrels, puffins, gullemots, oyster catchers, and other characteristic sea birds breed.

On the majority of the reserved sites extermination by plume and cold-storage hunters was being pushed to a successful conclusion up to the date of reservation, but an effective warden service has eliminated this danger, and is greatly assisting in the preservation of an avifauna necessary to the welfare of the people.

NATIONAL MONUMENTS.

Under the authority of the act approved June 8, 1906, the President, by formal proclamation prepared in this Bureau, has created, out of the unappropriated and unreserved lands, eight national monuments as follows: Devil's Tower, Wyoming; Petrified Forest and Montezuma Castle, Arizona; El Morro and Chaco Canyon, New Mexico; Muir Woods, California; Natural Bridges, Utah; and Lewis and Clark Cavern, Montana. And out of lands already reserved in national forests, seven monuments: The Grand Canyon and Tonto, Arizona; Gila Cliff Dwellings, New Mexico; Lassen Peak, Cinder Cone, and Pinnacles, California; and Jewel Cave, South Dakota. The monuments within national forests are under the jurisdiction of the Forest Service, Department of Agriculture.

The words of the act, "Historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest," fix practically no limits as to the character of the object to be reserved, and therefore the monuments created vary greatly in their physical characteristics.

The Devil's Tower is an immensely high and isolated rock, an extraordinary example of erosion, and was a noted landmark for the Indians and early white trapper and explorer in the West.

The Petrified Forest, so-called, is a tract of Arizona desert over which are scattered multitudinous fragments of silicified forest remains, some of which are in the form of huge logs. The monument occupies a part of the original site, which in an early period of the present geologic time was covered by an immense forest growth.

Montezuma Castle, Arizona, is an important cliff-dwelling pueblo, containing many unexplored rooms, while Chaco Canyon New Mexico, is probably the largest and, in some respects, the most important reservation of prehistoric pueblo ruins in the Southwest. Bonito, the largest structure, is believed to have contained twelve hundred rooms. Other important prehistoric ruins are also located within this monument.

El Morro, New Mexico, is a lofty and isolated rock, standing opposite the trail of the earliest Spanish exploring and military expeditions, the leaders of which permanently inscribed thereon their names with dates and other interesting data.

Muir Woods of California is a monument of giant redwood trees, relinquished to the Government for a national monument by William Kent, of California.

The Natural Bridges, Utah, embrace three of the most extraordinary examples of natural bridge construction in the world, and the Lewis and Clark Cavern is a cave whose beauty is probably second to no other in the United States.

The appropriation of $3,000 for the administration of the monuments during 1908 reverted to the Treasury because it was available in the disposition of abandoned military reservations only, and an appropriation for 1909 of $5,000, requested by the Department, was not made. The latter sum is greatly needed to administer those monuments, which suffer by vandalism, or by excavation and appropriation by unauthorized persons of reserved objects and prehistoric relics.

All of the national monuments are worthy, in the broadest sense, of that fostering care of the Government necessary to preserve them intact for the benefit and enjoyment of the people for all time. The alternative is private ownership and exploitation for private gain, a disposition which will greatly limit their usefulness and improperly levy a tax upon every individual who visits them.

CONDITION OF BUILDING.

The condition of the rooms in which the clerks of the General Land Office perform their work is generally very poor. There is insufficient room for the proper transaction of the business of the Office. The one new room secured by the building of a floor so as to divide the room occupied by the posting division and construct two therefrom, has been utilized as a room for the file clerks; but the normal increase of files is such that, of the rooms vacated, the space of all, except two small ones, will still be needed for the files.

The stack from the engine house runs through six of the rooms on the east side of the court—two on each floor—rendering two of the six, which are small, impossible of occupation, and raising the heat in the remaining some ten or twelve degrees above that of other rooms, rendering them almost unbearable, the thermometer registering as high as 112° during the summer months. I earnestly recommend an appropriation by Congress of such sufficient sum that a stack for the power house may be constructed in the open court.

An examination of the roof of the building has been made and a condition revealed which should have speedy attention. There are

numerous leaks arising from faulty construction. The walls of the rooms in the top floor show the result from these leaks. The report of this examination is in your office.

A special appropriation is also needed for new furniture. A great many of the desks are of a very antiquated design, dilapidated, highly insanitary and unsuited for present needs. Desks without roller top of much smaller dimensions should be procured, thus providing more space for clerks.

At least 80 per cent of the rooms have no carpeting of any kind; this in spite of the fact that in many instances the floors are made of an unsightly slate. An additional sum should be appropriated for the purpose of covering all the floors with a uniform design and quality of linoleum.

These extra appropriations are needed because the allotment of the contingent fund is practically exhausted in advance, owing to the necessary expenditures in the purchase of file cases to meet the demands of the new flat filing system rendered necessary by the adoption of new and modern methods of accounting and posting in the local land offices.

There should be a larger force of laborers to keep the rooms in a condition of cleanliness. The recent readjustment of the force of the General Land Office and the consequent moving of desks and cases from one room to another revealed a condition of affairs which was, to say the least, insanitary.

The sum of at least $10,000 should be appropriated by Congress for the purchase of office furniture and linoleum, in order that the Office may be properly equipped for the performance of its work. Such a sum would be more than saved in the additional work done by the employees being given more modern office appliances, and furnished more comfortable and sightly rooms.

MAPS.

Complete editions of maps of California, Wyoming, Montana, New Mexico, and the new State of Oklahoma were issued during the last fiscal year. Maps of Arizona and Utah have been compiled, the tracing of map of Utah has been completed, and the map will be issued during the year. The map of Nevada has been revised and is now in the hands of contractor for publication. Nebraska, Idaho, and Washington maps will also be revised and issued during the year.

NATIONAL FORESTS.

Since the issuance of the last annual report, nine additional national forests have been established—eight under section 24 of act of March 3, 1891 (26 Stat. L., 1095), and the Minnesota national forest by act of May 23, 1908. Twenty have been enlarged and ten reduced, the consolidations being as follows: Pinal Mountains with Tonto national

forest, Arizona; Big Burros with Gila, New Mexico, and Mount Taylor with Manzano, also in New Mexico. There are now 165 national forests, embracing 167,976,886 acres. The total increase in area of national forests since the beginning of the fiscal year is estimated at 17,144,221 acres.

Areas temporarily withdrawn but not needed for forestry purposes, are released from withdrawal upon recommendation of the Secretary of Agriculture, as rapidly as possible. Since the issuance of the last annual report, 1,283,851 acres have been released from withdrawal, and 486,500 acres eliminated from national forests and opened to settlement and entry.

CHANGES IN REGULATIONS.

Whenever found to be in the interest of good administration or in aid of applicants for land by simplifying the necessary procedure, such changes in regulations as were warranted by the laws have been made. Some of the more important modifications are as follows:

AMENDMENTS OF HOMESTEAD ENTRIES.

Where mistakes in description of lands are made by entrymen or persons acting for them, amendments are allowed to include the land intended to be entered, and if that be not subject to entry other contiguous lands can be taken by amendment provided one or more subdivisions originally intended to be entered are included. Amendments are also allowed where the lands originally entered are found to be unfit for residence and cultivation, by taking one or more adjoining subdivisions, retaining at least one contiguous subdivision of the land originally entered.

HOMESTEADS IN RECLAMATION PROJECTS.

After the completion of the required period of residence and cultivation, homestead entrymen are permitted to submit proof thereof; and, upon examination by this Office, if same be found sufficient, entrymen are so advised and that they are no longer required to reside upon the land, but must, upon water being furnished, reclaim at least one-half of the area of the entry and pay all charges imposed by the reclamation act, before final certificate and patent issues. For the convenience of entrymen in reclamation projects, charges for operation, building, and maintenance may be received by special fiscal agents of the Reclamation Service and transmitted by them to the proper receiver.

HOMESTEADS IN ALASKA.

Homesteaders in Alaska must establish their residence upon the land within six months after date of location and thereafter comply

with the homestead law as to residence and cultivation. They may cut timber for purposes necessary to the improvement and cultivation of the land. Homestead locations in Alaska may be contested and canceled on the same grounds as homestead entries in other parts of the public domain. The making and recording of one homestead location exhausts the homestead right.

CONTESTS—AFFIDAVITS FOR PUBLICATION.

Affidavits for service by publication in contest cases are not received unless filed within thirty days after execution, and unless they show diligent search for the defendant in the vicinity of the land and at his record post-office address within fifteen days preceding date of the affidavit. Registers and receivers are required to act promptly in the disposition of such applications. Both the register and receiver are required to act upon applications to select, enter, or locate public lands and upon proofs submitted upon existing entries.

PROCEEDINGS ON SPECIAL AGENTS' REPORTS.

In the interest of economy and for the expedition of business, notice of charges made by special agents against entries or locations are served either personally or by registered letter. In the latter event notice is mailed to the defendant both to the post-office address of record and to the one nearest the land. It is estimated that many thousands of dollars have been saved to the Government under this regulation.

LISTS OF LANDS SOLD.

To aid the proper State or Territorial authorities in imposing and collecting taxes upon lands after their final disposition by the Government, the proper authorities are, upon application and payment of the fee fixed by law, furnished with lists of lands sold, and in order that they and the public may likewise be advised of the cancellation of final entries the proper county official is in each of such cases notified of the fact that the final certificate has been canceled.

CERTIFIED COPIES AND FEES OF UNITED STATES SURVEYORS-GENERAL.

All certified copies furnished by surveyors-general are required to be prepared during office hours and the moneys received therefor deposited to the credit of the Treasury of the United States under the proper account. The surveyors-general are instructed to collect for services in such cases the exact cost thereof. Where deposits of the estimated cost of office work have been made, but the application is withdrawn before any work is performed, the deposit is repaid upon proper application.

TIMBER IN ALASKA.

Settlers, residents, and individual miners and prospectors of the district of Alaska are permitted to take, free of charge, and without previous permit, timber not exceeding $50 in value in any one year for their actual use for domestic purposes. Timber is disposed of in larger quantities to the persons named and to residents and those doing business in Alaska upon application to the receiver of the proper land office, and after appraisal by a special agent and deposit of the appraised value cutting is permitted to begin, subject, however, to stoppage of the cutting in event of noncompliance with the terms of sale.

COAL LANDS.

Declaratory statements and entries are not received upon land withdrawn for classification, but those who have opened and improved coal mines during the period of withdrawal are permitted to file in the proper land office *a notice of claim*, and upon classification of the lands are permitted to assert their formal claim to purchase at such price and upon such terms and conditions as are in force at time of the restoration of the lands. Affidavits in coal-land cases may be made before the register or receiver, or any officer authorized to administer oaths, in the land district where the lands are situated.

EVIDENCE OF TITLE TO MINING CLAIMS AND OF WATER RIGHTS.

Abstracts of title prepared by duly authorized abstracters are received as evidence when the abstracters have furnished copy of existing local statute by which they are authorized to compile abstracts, and certificates by the proper local officials that they have complied with such statute. Similar evidence of water rights in desert-land cases is received upon like showing.

LOCATIONS OF WARRANTS, SCRIP, CERTIFICATES, SOLDIERS' ADDITIONAL RIGHTS, ETC.

Applicants to locate are required, in order that persons claiming the land adversely or desiring to show its mineral character may have opportunity to file objection, to publish and post notice of their applications for a period of thirty days. They are also required to furnish the affidavit of some person possessed of personal knowledge of the premises showing that the land selected is not occupied adversely to the locator or selector.

ISOLATED TRACTS.

Lands are ordered sold upon the applications of those who desire same for their own use and not for speculation. Applications may be verified before any officer authorized to administer oaths in the

county or land district in which the tracts applied for are situated. The regulations have been prepared with a view of meeting the convenience and needs of bona fide applicants and at the same time insuring the conservative and equitable disposition of the lands.

PAYMENTS TO PUBLIC CREDITORS.

The practice of requiring receipt for moneys in advance of actual payment has been discontinued except in cases where such receipts are required by law or contract. A bill signed and certified by the creditor and certified to as correct by the officer by whom articles are received or who supervised the services rendered is taken and paid by check. Disbursing officers are required to submit a statement of balances after comparison with their check stubs and with a monthly statement furnished them by their depositaries showing the number and amount of their paid checks.

NEW FORMS OF APPLICATIONS, ETC.

Local officers and the public have been instructed with reference to use of new forms adopted and required to be used after March 1, 1908. The forms effect a consolidation of separate affidavits formerly required to be filed in the several classes of cases and accomplish a material saving in expense, time, and file space.

CREDIT FOR PRIOR PAYMENT IN SECOND APPLICATION TO COMMUTE HOMESTEAD ENTRIES.

Entrymen whose commutation proofs are rejected and certificates canceled because the proofs do not show sufficient compliance with law to warrant issuance of patent, are allowed, when they submit new commutation proof, to have credit for the moneys paid in connection with the proof originally submitted, thus avoiding application for repayment in connection with the first application and the making of a new payment of purchase money with the second proof.

FOREST LIEU LAND FRAUDS.

The case of the United States *v.* Frederick A. Hyde, John A. Benson, Joost H. Schneider, and Henry P. Dimond terminated June 23, 1908, by the conviction in the supreme court of the District of Columbia of F. A. Hyde and Joost H. Schneider and acquittal of John A. Benson and Henry P. Dimond.

This is one of the most, if not the most, important case that has ever been prosecuted by the United States against persons charged with attempts to defraud the Government out of its public lands. The prominence of the parties, the magnitude of the scheme in which they were engaged, and the great number of people affected by the prosecution by reason of having purchased so-called scrip rights from

Hyde and Benson make it not amiss that a brief history of the case be here given.

During the month of September, 1902, suspected irregularities with reference to the administration of the work pertaining to forest lieu selections made under the provisions of the act of June 4, 1897 (30 Stat. L., 36), led to the change of the examiner in charge of such work in this Office; and under the new administration gross irregularities with respect to the disposition of cases were discovered. Following closely upon this change came the report of a special agent which tended to show that the irregularities theretofore discovered were not the result of inadvertence, or lack of system, but were the effect of a well-laid scheme. Following the report of the special agent, all selections made by F. A. Hyde or in which his name appeared, based upon school lands in certain reserves in California and Oregon, were suspended, and the charges made by the special agent were thoroughly investigated. The investigation led to an indictment which issued out of the supreme court of the District of Columbia in February, 1904, charging Hyde, Benson, Schneider, and Dimond with conspiracy to defraud the United States under section 5440 (Revised Statutes).

The allegations of the Government were to the effect that there had been an attempt to exchange bogus titles acquired fraudulently from the States of California and Oregon to the United States, and the selection in lieu thereof of valuable public lands belonging to the United States situated without reserves. They were charged with, first, the employment of fictitious names forged to State applications and with supplying the necessary connecting links in their chain of titles by forgery; second, by inducing, fraudulently, people who had no desire to purchase lands from the States to make application, in order that the lands might be assigned to them, Hyde and Benson, in derogation of the laws of the States which required each applicant to swear that the land was taken by him for his own use and benefit and not for the use and benefit of any other person or persons; third, by procuring notaries public to affix their signatures or jurats certifying that parties had appeared before them and were sworn, while, as a matter of fact, the parties did not appear before the notaries, and in some instances no such persons existed; fourth, by bribing employees of this Office to improperly advance their selections for consideration; fifth, by influencing corruptly forest officers to report as desirable for forest reservation areas in which they, Hyde and Benson, had or were in position to secure bogus titles to the State lands.

Owing to the large number of witnesses on behalf of the Government and the defendants, a special appropriation was made by the Congress for defraying the expenses of the trial. The case was called

on April 1, 1908, and consumed almost three months, ending, as suggested above, on June 23d following.

The case has cost the Government enormously in court fees and the salaries of special counsel and in time of its employees; and perhaps a dozen lawyers, some of them of national reputation, have participated in the different phases of the case as counsel for the defendants.

In addition to the conviction of Hyde and Schneider the investigation led to the dismissal of four employees of this Office as being directly or indirectly in the pay of the alleged conspirators, and to the removal from office of a forest superintendent, a forest supervisor, and a number of other officials.

For obvious reasons no action was taken on the numerous selections made by Hyde and Benson or their associates pending the determination of the criminal case against them, all action being suspended by Department order. Since, however, the case has come to trial, there is now no reason why the selections should not be taken up and disposed of on their own merits; and as the Department has removed the suspensions this Office is now actively engaged in preparing the cases for final adjudication. There are in all about 1,200 selections, embracing about 250,000 acres of land, involved. Of this number something more than 200 have passed to patent, and suits are now pending in the various United States courts to set aside the patents on the ground that they were obtained by fraud. There are probably 200 selections based on school lands in forest reserves in Oregon and California wherein the records do not disclose any active participation on the part of Benson and Hyde or any of their known associates. These cases will be immediately investigated, and if it is found that they are free from fraud the selections will be passed to patent if otherwise regular.

The pending unpatented selections made by Benson and Hyde, or in their interest, will be thoroughly investigated. Much evidence is now available relating to various selections. This is being collated and arranged so that it may be readily used as a basis of further proceedings in the local land offices. The purchases concerning which we have no information must be investigated by special agents; and if, as a result of such investigation, further proceedings are warranted, hearings will be ordered in due course of business. Any plan that may be adopted by this office, considering the great number of selections pending, will necessarily require much clerical work as well as extended investigation in the field. The theory on which this office undertakes the investigation rests upon the recognized duty of the Land Department to ascertain the validity of every title that is tendered in exchange for the land outside of a forest reserve whenever the title so tendered is deemed of doubtful character, and to reject the selection if the title is found imperfect or fraudulent.

CREEK LANDS IN ALABAMA.

By treaty of March 24, 1832 (Indian Treaties, vol. 2, p. 247), the Creek tribe of Indians ceded to the United States all of their lands east of the Mississippi River. In consideration of such cession the Government engaged, among other things, as follows:

ARTICLE II. The United States engage to survey the said land as soon as the same can be conveniently done, after the ratification of this treaty, and when the same is surveyed to allow ninety principal chiefs of the Creek tribe to select one section each, and every other head of a Creek family to select one-half section each, which tracts shall be reserved from sale for their use for the term of five years, unless sooner disposed of by them. A census of these persons shall be taken under the direction of the President and the selections shall be made so as to include the improvements of each person within his selection, if the same can be so made, and if not, then all the persons belonging to the same town, entitled to selections, and who can not make the same, so as to include their improvements, shall take them in one body in a proper form. And twenty sections shall be selected, under the direction of the President for the orphan children of the Creeks, and divided and retained or sold for their benefit as the President may direct. Provided, however, that no selections or locations under this treaty shall be so made as to include the agency reserve.

ARTICLE III. These tracts may be conveyed by the persons selecting the same, for any other persons for a fair consideration, in such manner as the President may direct. The contract shall be certified by some person appointed for that purpose by the President, but shall not be valid till the President approves the same. A title shall be given by the United States on the completion of the payment.

ARTICLE IV. At the end of five years, all the Creeks entitled to these selections, and desirous of remaining, shall receive patents therefor in fee simple, from the United States.

ARTICLE VI. Twenty-nine sections in addition to the foregoing may be located, and patents for the same shall then issue to those persons, being Creeks, to whom the same may be assigned by the Creek tribe. But whenever the grantees of these tracts possess improvements, such tracts shall be so located as to include the improvements, and as near as may be in the centre. And there shall also be granted by patent to Benjamin Marshall, one section of land, to include his improvements on the Chatahoochee River, to be bounded for one mile in a direct line along the said river, and to run back for quantity. There shall also be granted to Joseph Bruner a colored man, one-half section of land, for his services as an interpreter.

It is a matter of history that the Creek territory ceded by this treaty was occupied by the white race with almost the rapidity of the rush into Oklahoma, and now forms one of the most populous and wealthy sections of Alabama. The lands reserved for the Indians were soon disposed of by them, and the Creeks vanished forever from their ancient home. Pursuant to section 3 of the treaty, President Jackson appointed Leonard Tarrant, a personal friend of known integrity, to certify contracts entered into with the Creeks for the sale of their lands, and many were so certified, approved by the President, and patents issued. A very large proportion of such contracts, however, appear never to have been certified or approved, and this office has no record of the transaction other than notations

upon its tract books, often in pencil, that the land was reserved for a certain Indian. So far as can be ascertained, no patent has ever been issued for land reserved under this treaty, except in favor of those who entered into contracts of purchase with the Creeks, that were duly certified to the President and approved by him, or the assignees of such purchasers, and there would seem to be no warrant for the issuance of patents except in favor of such. In a great majority of cases no patent has been issued.

Your attention is respectfully called to this situation. It would seem that a thorough investigation of the matter should be made through a commission duly appointed for that purpose, who should report the results to Congress.

OPENING OF INDIAN LANDS.

The only opening of Indian lands which occurred during the year and not reported in the last report was a part of the "Lower Brule" Reservation in South Dakota. These lands were opened under a registration and drawing prescribed by the President's proclamation of August 12, 1907, and the act of April 21, 1906 (34 Stat. L., 124) the plan being similar to that used in the "Huntley" opening in 1906, and it proved entirely satisfactory to the people.

Of these lands, 20,930.89 acres were classified as first-class lands, and appraised at $2.50 per acre; 14,031.14 acres as second-class, at $2.25 per acre 11,038.25; acres as third class, at $1.75 per acre, and 9,283.44 acres as fourth class, at $1.25 per acre, making a total appraisement of $114,818.60. Practically all of the lands were entered by persons who registered for the opening.

Respectfully submitted.

FRED DENNETT,
Commissioner.

The SECRETARY OF THE INTERIOR.

APPENDIX.

STATISTICS RELATING TO THE DISPOSITION OF THE PUBLIC DOMAIN.

Average number of employees of the General Land Office during the fiscal year 1908.

In General Land Office, Washington, D. C.	491
In 14 surveyors-general offices	199
In 104 district land offices	410
In the field:	
Examiners of surveys	22
Special agents and clerks	97
Total	1,219

United States district land offices June 30, 1908.

Location of office.	Date of act or executive order authorizing the establishment.	Date of opening.[a]	Location of office.	Date of act or executive order authorizing the establishment.	Date of opening.[a]
Alabama:			Colorado—Cont'd.		
Montgomery	July 10, 1832	[b]Jan. 1, 1834	Pueblo	May 27, 1870	Jan. 16, 1871
Alaska:			Sterling	Feb. 6, 1890	Aug. 1, 1890
Fairbanks	May 14, 1907	July 1, 1907	Florida:		
Juneau	Apr. 2, 1902	June 20, 1902	Gainesville	June 8, 1872	Apr. 30, 1873
Nome	May 14, 1907	July 1, 1907	Idaho:		
Arizona:			Blackfoot	Sept. 3, 1880	Nov. 16, 1886
Phoenix	July 25, 1905	Oct. 2, 1905	Boise	July 26, 1866	Jan. 13, 1868
Arkansas:			Coeur d'Alene	July 14, 1884	Dec. 21, 1885
Camden	Jan. 10, 1871	Mar. 20, 1871	Hailey	Jan. 24, 1883	July 16, 1883
Dardanelle	July 14, 1870	May 31, 1871	Lewiston	July 26, 1866	Sept. 26, 1871
Harrison	....do	Feb. 27, 1871	Iowa:		
Little Rock	Feb. 17, 1818	Sept. 1, 1821	Des Moines	Aug. 2, 1852	Jan. 28, 1853
California:			Kansas:		
Eureka	Mar. 29, 1858	July 24, 1858	Colby	Dec. 20, 1893	Feb. 5, 1894
Independence	Apr. 22, 1886	Mar. 22, 1887	Dodge City	....do	Feb. 3, 1894
Los Angeles	June 12, 1869	Sept. 22, 1869	Topeka	July 24, 1861	Sept. 10, 1861
Oakland [c]	Jan. 16, 1857	Nov. 3, 1857	Louisiana:		
Redding	May 13, 1890	July 15, 1890	Natchitoches	July 7, 1838	Oct. 12, 1838
Sacramento	July 26, 1866	Nov 12, 1867	New Orleans	Mar. 3, 1811	[b]Jan. 1, 1812
Susanville	Feb. 10, 1871	Mar. 2, 1871	Michigan:		
Visalia	Mar. 29, 1858	July 10, 1858	Marquette	Mar. 19, 1857	July 14, 1857
Colorado:			Minnesota:		
Del Norte	June 20, 1874	Mar. 22, 1875	Cass Lake	Apr. 1, 1903	July 1, 1903
Denver	June 4, 1864	Aug. 15, 1864	Crookston	Apr. 29, 1878	May 5, 1879
Durango	Apr. 20, 1882	Oct. 2, 1882	Duluth	Mar. 27, 1862	Jan. 15, 1863
Glenwood Springs	July 3, 1884	Nov. 10, 1884	Mississippi:		
Hugo	Feb. 6, 1890	Sept. 7, 1890	Jackson	June 23, 1836	July 25, 1836
Lamar	Aug. 4, 1886	Jan. 3, 1887	Missouri:		
Leadville	Apr. 5, 1879	July 1, 1879	Springfield	June 26, 1834	Oct. 4, 1838
Montrose	Jan. 4, 1888	Sept. 1, 1888	Montana:		
			Billings	Feb. 5, 1906	July 2, 1906

[a] Where date of opening is not known, date of first entry made at the office is given.
[b] About.
[c] Land office removed from San Francisco to Oakland May 1, 1906.

United States district land offices June 30, 1908—Continued.

Location of office.	Date of act or executive order authorizing the establishment.	Date of opening.
Montana—Cont'd.		
Bozeman	June 20, 1874	Oct. 5, 1874
Glasgow	Feb. 25, 1907	June 1, 1907
Great Falls	May 8, 1902	Aug. 1, 1902
Helena	Mar. 2, 1867	Apr. 27, 1867
Kalispell	Mar. 2, 1897	July 1, 1897
Lewistown	Apr. 1, 1890	Nov. 26, 1890
Miles City	Apr. 30, 1880	Oct. 19, 1880
Missoula	Apr. 1, 1890	Apr. 20, 1891
Nebraska:		
Alliance	Apr. 16, 1890	July 1, 1890
Broken Bow	do	July 7, 1890
Lincoln	July 7, 1868	Sept. 7, 1868
North Platte	Apr. 22, 1872	Apr. 11, 1873
O'Neill	Apr. 7, 1888	July 16, 1888
Valentine	June 19, 1882	July 7, 1883
Nevada:		
Carson City	July 2, 1862	Mar. 1, 1864
New Mexico:		
Clayton	Dec. 18, 1888	Aug. 12, 1889
Lascruces	Mar. 10, 1883	May 1, 1883
Roswell	Mar. 1, 1889	Dec. 9, 1889
Santa Fe	May 24, 1858	Nov. 24, 1858
North Dakota:		
Bismarck	Apr. 24, 1874	Oct. 12, 1874
Devils Lake	Mar. 3, 1883	Aug. 24, 1883
Dickinson	Mar. 16, 1904	July 1, 1904
Fargo	Dec. 29, 1873	Sept. 1, 1874
Minot	Sept. 26, 1890	Oct. 1, 1891
Williston	Apr. 26, 1906	Aug. 1, 1906
Oklahoma:		
Alva [a]	Aug. 25, 1893	Sept. 16, 1893
Elreno	July 4, 1901	Aug. 6, 1901
Guthrie	Mar. 3, 1889	Apr. 22, 1889
Lawton	July 4, 1901	Aug. 6, 1901
Woodward	Aug. 25, 1893	Sept. 16, 1893
Oregon:		
Burns	June 1, 1889	Sept. 2, 1889
Lagrande	July 3, 1866	Nov. 15, 1867
Lakeview	June 6, 1877	Aug. 6, 1877
Portland [b]	Aug. 24, 1854	Jan. 1, 1855
Roseburg	Sept. 15, 1859	Jan. 3, 1860
The Dalles	Jan. 11, 1875	June 1, 1875
South Dakota:		
Aberdeen	Mar. 23, 1882	Oct. 2, 1882
Chamberlain	Feb. 10, 1890	Apr. 3, 1890
Huron [c]	Mar. 23, 1882	Oct. 9, 1882
Mitchell	July 14, 1880	Jan. 3, 1882
Pierre	Feb. 10, 1890	May 12, 1890
Rapid City	Dec. 13, 1888	Jan. 15, 1889
Utah:		
Salt Lake City	July 16, 1868	Nov. 1, 1868
Vernal	May 9, 1905	July 1, 1905
Washington:		
North Yakima	Apr. 11, 1885	Apr. 24, 1885
Olympia	May 16, 1890	Oct. 1, 1890
Seattle	June 27, 1887	Dec. 3, 1887
Spokane	June 23, 1883	Oct. 1, 1883
Vancouver	May 16, 1860	July 3, 1861
Walla Walla	Mar. 3, 1871	July 17, 1871
Waterville	May 16, 1890	Nov. 6, 1890
Wisconsin:		
Wausau	June 19, 1872	Aug. 19, 1872
Wyoming:		
Buffalo	Mar. 3, 1887	May 1, 1888
Cheyenne	Feb. 5, 1870	Aug. 10, 1870
Douglas	Apr. 23, 1890	Nov. 1, 1890
Evanston	Aug. 9, 1876	Aug. 13, 1877
Lander	Apr. 23, 1890	Nov. 8, 1890
Sundance	Apr. 3, 1890	Oct. 27, 1890

[a] Closed April 30, 1908. Business to Woodward.
[b] Land office removed from Oregon City to Portland July 1, 1905.
[c] Closed March 31, 1908. Business to Pierre.

NOTE.—By act of July 31, 1876, the land offices in Ohio, Indiana, and Illinois were abolished, and by act of March 3, 1877, the vacant tracts of public lands in Ohio, Indiana, and Illinois are made subject to entry and location at the General Land Office, Washington, D. C.

List of offices of United States surveyors-general.

Location.	Date of act establishing office.	Location.	Date of act establishing office.
Alaska: Juneau	May 17, 1884	Nevada: Reno	July 4, 1866
Arizona: Phoenix	Feb. 24, 1863	New Mexico: Santa Fe	Mar. 2, 1867
California: San Francisco	Mar. 3, 1851	Oregon: Portland	July 17, 1854
Colorado: Denver	Feb. 28, 1861	South Dakota: Huron	Apr. 10, 1890
Idaho: Boise	June 29, 1866	Utah: Salt Lake City	July 16, 1868
Louisiana: New Orleans	Mar. 3, 1831	Washington: Olympia	July 17, 1854
Montana: Helena	July 2, 1864	Wyoming: Cheyenne	Feb. 5, 1870

Field division headquarters of special agents of General Land Office.

Field division:
1.....Portland, Oreg.
2.....San Francisco, Cal.
3.....Spokane, Wash.
4.....Helena, Mont.
5.....Denver, Colo.
6.....Phoenix, Ariz.
7.....Cheyenne, Wyo.

Field division—Continued.
8.....Duluth, Minn.
9.....Little Rock, Ark.
10.....Salt Lake City, Utah.
11.....Enid, Okla.
12.....Santa Fe, N. Mex.
13.....Gainesville, Fla.

Area of States and Territories.

[Based upon careful joint calculations made in the General Land Office, the Geological Survey, and the Bureau of the Census.]

States and Territories.	Land surface.		Water surface.		Total areas.	
	Square miles.	Acres.	Square miles.	Acres.	Square miles.	Acres.
Alabama	51,279	32,818,560	719	460,160	51,998	33,278,720
Arizona	113,840	72,857,600	116	74,240	113,956	72,931,840
Arkansas	52,525	33,616,000	810	518,400	53,335	34,134,400
California	156,092	99,898,880	2,205	1,411,200	158,297	101,310,080
Colorado	103,658	66,341,120	290	185,600	103,948	66,526,720
Connecticut	4,820	3,084,800	145	92,800	4,965	3,177,600
Delaware	1,965	1,257,600	405	259,200	2,370	1,516,800
District of Columbia	60	38,400	10	6,400	70	44,800
Florida	54,861	35,111,040	3,805	2,435,200	58,666	37,546,240
Georgia	58,725	37,584,000	540	345,600	59,265	37,929,600
Idaho	83,779	53,618,560	534	341,760	84,313	53,960,320
Illinois	56,002	35,841,280	663	424,320	56,665	36,265,600
Indiana	35,885	22,966,400	469	300,160	36,354	23,266,560
Iowa	55,586	35,575,040	561	359,040	56,147	35,934,080
Kansas	81,774	52,335,360	384	245,760	82,158	52,581,120
Kentucky	40,181	25,715,840	417	266,880	40,598	25,982,720
Louisiana	45,409	29,061,760	3,097	1,982,080	48,506	31,043,840
Maine	29,895	19,132,800	3,145	2,012,800	33,040	21,145,600
Maryland	9,941	6,362,240	2,386	1,527,040	12,327	7,889,280
Massachusetts	8,039	5,144,960	227	145,280	8,266	5,290,240
Michigan	57,480	36,787,200	500	320,000	57,980	37,107,200
Minnesota	80,858	51,749,120	3,824	2,447,360	84,682	54,196,480
Mississippi	46,362	29,671,680	503	321,920	46,865	29,993,600
Missouri	68,727	43,985,280	693	443,520	69,420	44,428,800
Montana	145,776	93,296,640	796	509,440	146,572	93,806,080
Nebraska	76,808	49,157,120	712	455,680	77,520	49,612,800
Nevada	109,821	70,285,440	869	556,160	110,690	70,841,600
New Hampshire	9,031	5,779,840	310	198,400	9,341	5,978,240
New Jersey	7,514	4,808,960	710	454,400	8,224	5,263,360
New Mexico	122,503	78,401,920	131	83,840	122,634	78,485,760
New York	47,654	30,498,560	1,550	992,000	49,204	31,490,560
North Carolina	48,740	31,193,600	3,686	2,359,040	52,426	33,552,640
North Dakota	70,183	44,917,120	654	418,560	70,837	45,335,680
Ohio	40,740	26,073,600	300	192,000	41,040	26,265,600
Oklahoma	69,414	44,424,960	643	411,520	70,057	44,836,480
Oregon	95,607	61,188,480	1,092	698,880	96,699	61,887,360
Pennsylvania	44,832	28,692,480	294	188,160	45,126	28,880,640
Rhode Island	1,067	682,880	181	115,840	1,248	798,720
South Carolina	30,495	19,516,800	494	316,160	30,989	19,832,960
South Dakota	76,868	49,195,520	747	478,080	77,615	49,673,600
Tennessee	41,687	26,679,680	335	214,400	42,022	26,894,080
Texas	262,398	167,934,720	3,498	2,238,720	265,896	170,173,440
Utah	82,184	52,597,760	2,806	1,795,840	84,990	54,393,600
Vermont	9,124	5,839,360	440	281,600	9,564	6,120,960
Virginia	40,262	25,767,680	2,365	1,513,600	42,627	27,281,280
Washington	66,836	42,775,040	2,291	1,466,240	69,127	44,241,280
West Virginia	24,022	15,374,080	148	94,720	24,170	15,468,800
Wisconsin	55,256	35,363,840	810	518,400	56,066	35,882,240
Wyoming	97,594	62,460,160	320	204,800	97,914	62,664,960
	2,974,159	1,903,461,760	52,630	33,683,200	3,026,789	1,937,144,960
Alaska					590,884	378,165,760
Guam					210	134,400
Hawaii					6,449	4,127,360
Panama Canal strip					474	303,360
Philippine Islands					115,026	73,616,640
Porto Rico					3,435	2,198,400
Tutuila Group, Samoa					77	49,280
Total					3,743,344	2,395,740,160

Owing to their location adjoining the Great Lakes, the States enumerated below contain approximately an additional number of square miles as follows: Illinois, 1,674 square miles of Lake Michigan; Indiana, 230 square miles of Lake Michigan; Michigan, 16,653 square miles of Lake Superior, 12,922 square miles of Lake Michigan, 9,925 square miles of Lake Huron, and 460 square miles of lakes St. Clair and Erie; Minnesota, 2,514 square miles of Lake Superior; New York, 3,140 square miles of lakes Ontario and Erie; Ohio, 3,443 square miles of Lake Erie; Pennsylvania, 891 square miles of Lake Erie; Wisconsin, 2,378 square miles of Lake Superior and 7,500 square miles of Lake Michigan.

In addition to the water areas noted above, California claims jurisdiction over all Pacific waters lying within 3 English miles of her coast; Oregon claims jurisdiction over a similar strip of the Pacific Ocean 1 marine league in width between latitude 42° north and the mouth of the Columbia River; and Texas claims jurisdiction over a strip of Gulf water 3 leagues in width, adjacent to her coast and between the Rio Grande and the Sabine River.

Final homestead entries from the passage of the homestead act to June 30, 1908.

Fiscal year ended June 30—	Number.	Acres.	Fiscal year ended June 30—	Number.	Acres.
1868	2,772	355,086.04	1890	28,080	4,060,592.77
1869	3,965	504,301.97	1891	27,686	3,954,587.77
1870	4,041	519,727.84	1892	22,822	3,259,897.07
1871	5,087	629,162.25	1893	24,204	3,477,231.63
1872	5,917	707,409.83	1894	20,544	2,929,947.41
1873	10,311	1,224,890.93	1895	20,922	2,980,809.30
1874	14,129	1,585,781.56	1896	20,099	2,790,242.55
1875	18,293	2,068,537.74	1897	20,115	2,778,404.20
1876	22,530	2,590,552.81	1898	22,281	3,095,017.75
1877	19,900	2,407,828.19	1899	22,812	3,134,149.44
1878	22,460	2,662,980.82	1900	25,286	3,477,842.71
1879	17,391	2,070,842.39	1901	37,568	5,241,120.76
1880	15,441	1,938,234.89	1902	31,627	4,342,747.70
1881	15,077	1,928,204.76	1903	26,373	3,576,964.14
1882	17,174	2,219,453.80	1904	23,932	3,232,716.75
1883	18,998	2,504,414.51	1905	24,621	3,419,387.15
1884	21,843	2,945,574.72	1906	25,546	3,526,748.58
1885	22,066	3,032,679.11	1907	26,485	3,740,567.71
1886	19,356	2,663,531.83	1908	29,636	4,242,710.59
1887	19,866	2,749,037.48			
1888	22,413	3,175,400.64	Total	825,218	111,424,828.89
1889	25,549	3,681,708.80			

Timber and stone entries from the passage of the act of June 3, 1878, to June 30, 1908.

State or Territory.	Number of entries.	Acres.	Amount received.
Alabama	138	11,463.19	$28,663.39
Arizona	3	200.00	500.00
Arkansas	1,888	207,125.76	517,834.74
California	18,766	2,657,804.50	6,644,737.17
Colorado	2,481	310,314.39	775,790.53
Florida	624	71,816.22	179,522.88
Idaho	6,641	903,315.95	2,273,248.05
Iowa	3	119.36	298.40
Louisiana	1,395	126,362.02	315,909.62
Michigan	1,360	115,229.85	288,075.17
Minnesota	9,290	1,150,741.80	2,880,174.02
Mississippi	64	4,725.71	11,814.59
Montana	4,129	543,679.57	1,359,151.58
Nebraska	1	97.20	243.00
Nevada	49	6,222.32	15,558.19
North Dakota	72	7,536.20	18,840.50
Oregon	22,637	3,285,006.82	8,212,512.79
South Dakota	357	41,502.16	103,762.62
Utah	6	761.07	1,902.68
Washington	14,883	2,004,099.35	5,010,251.25
Wisconsin	1,016	74,846.25	187,117.12
Wyoming	2,742	310,152.19	775,377.02
Total	88,545	11,833,121.88	29,601,285.31

Desert land entries from the passage of the act of March 3, 1877, to June 30, 1908.

State or Territory.	Entries.		Area.		Amount.		Total.
	Original.	Final.	Original.	Final.	Original.	Final.	
			Acres.	*Acres.*			
Arizona	3,691	796	1,145,315.80	239,072.05	$334,402.37	$230,539.27	$564,941.64
California	8,576	1,392	2,102,307.10	337,752.18	540,549.32	360,765.93	901,315.25
Colorado	7,305	1,181	1,374,976.92	200,620.23	344,296.41	200,463.90	544,760.31
Dakota Territory	35	1	20,021.00	300.00	5,005.25	300.00	5,305.25
Idaho	9,950	3,200	1,869,669.98	580,619.26	467,360.30	580,366.05	1,047,726.35
Montana	20,341	8,773	4,052,099.54	1,713,641.72	1,020,968.90	1,724,462.73	2,745,431.63
Nevada	829	159	214,300.26	40,958.85	53,808.17	40,971.37	94,779.54
New Mexico	6,893	880	1,411,007.53	219,385.96	354,603.27	219,031.11	573,634.38
North Dakota	501	82	82,862.21	13,773.38	20,715.76	13,821.08	34,536.84
Oregon	3,294	848	588,564.86	152,792.76	147,207.15	152,786.59	299,993.74
South Dakota	1,362	133	233,673.15	26,456.78	58,426.08	26,456.78	84,882.86
Utah	5,791	1,573	1,065,321.70	265,646.55	273,122.75	271,539.29	544,662.04
Washington	2,892	329	526,298.26	45,817.31	142,804.86	49,566.79	192,371.65
Wyoming	12,439	4,240	2,975,618.61	1,032,531.08	750,935.40	1,041,421.88	1,792,357.28
Total	83,899	23,587	17,662,036.92	4,869,368.11	4,514,205.99	4,912,492.77	9,426,698.76

Timber culture entries from the passage of the act of March 3, 1873, to June 30, 1908.

State or Territory.	Entries.			Area.			Amount.			
	Original.	Final.	Commuted.	Original.	Final.	Commuted.	Fees (original).	Fees (final).	Purchase money.	Total.
				Acres.	*Acres.*	*Acres.*				
Arizona	1,152	52	74	164,806.63	7,149.14	10,223.42	$15,224.00	$208.00	$12,779.26	$28,211.26
Arkansas	41	4	1	4,817.14	480.00	40.00	480.00	16.00	44.00	540.00
California	8,264	480	567	1,163,922.03	63,411.58	78,728.76	110,014.00	1,904.00	98,499.13	210,417.13
Colorado	27,864	3,789	660	4,332,922.19	585,243.30	98,179.52	384,938.00	15,154.00	122,722.36	522,814.36
Dakota Territory	77,446	1,309	.....	12,055,642.98	185,467.24	.....	1,074,862.44	4,984.79	.....	1,079,847.23
Florida	3	.....	.....	480.00	.....	.....	42.00	.....	.....	42.00
Idaho	4,054	341	236	533,957.49	40,436.03	28,244.51	51,447.38	1,369.50	35,305.93	88,122.81
Iowa	1,044	390	39	81,378.95	31,987.87	2,292.17	11,838.83	1,560.00	2,965.22	16,364.05
Kansas	64,345	12,884	961	9,702,653.36	2,006,511.35	142,931.88	883,275.56	51,521.03	178,650.55	1,113,447.14
Louisiana	713	87	42	101,695.31	11,937.97	5,856.85	9,651.55	348.00	7,299.54	17,299.09
Minnesota	15,268	2,924	389	2,099,046.55	373,580.90	49,261.29	207,154.98	11,712.00	61,543.77	280,410.75
Montana	3,595	406	225	486,638.66	55,939.73	29,044.43	46,162.00	1,628.00	36,506.32	84,296.32
Nebraska	59,127	16,870	1,250	8,876,351.20	2,546,696.04	187,371.35	813,382.33	67,776.73	234,332.61	1,115,491.67
Nevada	46	1	.....	6,292.50	160.00	.....	614.00	4.00	.....	681.00
New Mexico	1,612	91	55	230,316.54	12,931.60	7,837.25	21,294.00	363.00	9,796.56	31,453.56
North Dakota	1,699	7,897	781	263,123.95	1,226,605.66	120,524.80	23,446.00	31,576.83	150,661.75	205,684.58
Oregon	7,126	1,499	252	1,051,235.21	224,056.67	35,902.61	95,821.00	6,016.00	44,878.37	146,715.37
South Dakota	2,925	13,764	821	449,583.61	2,124,753.58	121,730.98	40,151.00	55,036.00	152,082.89	247,269.89
Utah	1,476	138	89	179,690.74	15,556.26	10,157.44	17,925.00	552.00	12,696.85	31,173.85
Washington	9,354	2,003	538	1,302,193.51	292,287.52	75,689.54	125,615.00	8,008.00	94,770.83	228,393.83
Wisconsin	1	1	.....	40.00	40.00	.....	9.00	4.00	.....	13.00
Wyoming	3,123	332	125	459,556.42	50,383.08	15,288.29	41,904.00	1,328.00	19,135.91	62,367.91
Total	290,278	65,262	7,105	43,606,344.97	9,854,615.52	1,019,305.09	3,975,371.07	261,069.88	1,274,671.85	5,511,112.80

Coal-land entries from the passage of the act of March 3, 1873, to June 30, 1908.

State or Territory.	Number of entries.	Acres.	Amount received.
Alabama	2	239.40	$2,394.00
Alaska	38	5,967.57	59,675.77
Arizona	5	800.00	16,000.00
California	36	4,907.96	72,060.30
Colorado	977	147,638.09	2,039,636.95
Colorado (within the Ute Indian Reservation)	432	56,746.77	840,038.90
Dakota Territory	8	583.57	5,835.70
Idaho	2	280.00	2,800.00
Montana	287	41,318.20	699,625.30
Nevada	4	640.00	8,000.00
New Mexico	180	20,829.93	318,711.60
North Dakota	95	5,922.26	95,241.00
Oregon	50	8,163.33	86,940.30
South Dakota	2	200.00	2,000.00
Utah	284	40,847.31	657,495.70
Washington	334	50,399.33	762,042.40
Wyoming	608	89,360.82	1,450,292.75
Total	3,344	474,834.54	7,118,690.67

Public and Indian lands entered each year ended June 30, from 1902 to 1908, inclusive.

State or Territory.	1902.	1903.	1904.	1905.	1906.	1907.	1908.
	Acres.	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*
Alabama	79,030.51	118,015.48	95,338.63	97,561.08	102,621.51	92,530.30	81,228.56
Alaska	1,440.67	1,723.37	1,770.65	2,973.11	4,925.86	7,132.16	3,834.80
Arizona	449,175.64	142,775.78	234,085.06	151,340.84	107,054.87	86,121.64	198,509.64
Arkansas	351,997.42	425,695.34	516,964.53	416,583.11	441,530.07	496,015.40	333,676.41
California	656,406.35	957,507.84	986,253.31	1,032,758.32	809,811.28	579,294.93	766,932.98
Colorado	1,107,613.48	1,620,391.95	1,679,617.79	621,100.25	1,597,010.38	2,483,666.69	2,127,661.99
Florida	109,599.88	2,996,591.76	286,095.63	326,579.30	166,053.73	109,663.03	83,072.78
Idaho	671,327.03	700,472.55	855,754.73	609,568.10	734,763.70	1,162,745.25	1,087,402.94
Illinois	4.80	303.07	4.90	40.00	40.00	296.30	40.00
Indiana	5,733.06	20.97		9.30		129.70	10.08
Iowa	373,989.47	903.02	952.39	1,010.84	957.93	195.65	1,433.69
Kansas	233,210.20	457,529.18	268,627.46	273,100.34	669,438.67	611,726.97	332,931.81
Louisiana	11.15	188,457.17	95,324.72	269,200.68	80,086.61	89,608.79	59,450.26
Michigan	51,224.89	59,689.43	47,580.07	41,519.50	38,669.10	42,828.40	46,147.59
Minnesota	697,427.44	933,845.87	1,098,763.74	835,314.29	397,567.07	324,418.22	429,351.12
Mississippi	80,395.39	119,124.82	82,201.70	77,034.04	75,856.78	55,645.26	35,545.37
Missouri	67,808.37	98,080.95	117,304.56	104,096.72	101,426.89	154,871.72	129,157.20
Montana	1,354,222.54	1,533,205.29	1,052,994.63	1,086,290.05	1,782,279.90	1,218,780.97	1,494,052.02
Nebraska	536,762.24	503,531.32	1,318,931.13	4,792,351.65	1,736,964.79	1,785,762.47	1,781,823.80
Nevada	34,627.63	206,643.67	216,468.06	88,563.48	278,904.38	47,254.63	60,131.50
New Jersey					90.03		
New Mexico	443,507.26	886,276.60	601,360.93	603,264.07	1,235,059.38	2,758,006.91	2,850,337.11
North Dakota	2,548,606.34	2,935,112.18	1,798,551.95	1,679,722.76	3,325,828.23	2,256,423.56	1,383,957.19
Ohio	131.02	45.00					
Oklahoma	4,413,556.24	1,544,317.90	1,394,227.56	770,225.35	1,426,306.46	2,007,753.84	514,159.58
Oregon	1,297,632.14	1,926,395.13	1,172,415.14	769,480.58	617,293.21	951,481.34	1,021,001.29
South Dakota	670,261.59	755,853.40	823,240.29	1,028,149.12	1,707,684.39	1,502,411.24	2,086,171.82
Utah	380,441.50	165,006.03	133,503.01	185,517.13	413,030.21	334,827.36	469,311.88
Washington	1,261,567.45	1,418,319.48	961,822.89	773,541.23	989,907.66	911,327.34	825,813.57
Wisconsin	154,024.90	113,766.27	89,949.98	72,012.71	55,592.44	28,966.92	57,595.61
Wyoming	1,456,798.70	2,014,698.83	402,192.24	347,714.32	534,431.94	897,679.59	829,614.19
Total	19,488,535.30	22,824,299.65	16,332,297.68	17,056,622.27	19,431,187.47	20,997,566.58	19,090,356.78

Unappropriated lands on June 30, 1908.

State or Territory.	Surveyed.	Unsurveyed.	Total.
	Acres.	*Acres.*	*Acres.*
Alabama	129,713		129,713
Alaska		368,021,509	368,021,509
Arizona	12,905,121	29,864,081	42,769,202
Arkansas	1,061,185		1,061,185
California	23,232,284	6,640,209	29,872,493
Colorado	21,498,272	2,198,425	23,696,697
Florida	353,294	61,648	414,942
Idaho	7,308,958	19,476,044	26,785,002
Kansas	171,446		171,446
Louisiana	116,249		116,249
Michigan	135,551		135,551
Minnesota	1,523,205	265,500	1,788,705
Mississippi	42,791		42,791
Missouri	27,480		27,480
Montana	20,570,256	25,962,184	46,532,440
Nebraska	3,074,658		3,074,658
Nevada	33,339,460	27,837,590	61,177,050
New Mexico	31,566,999	13,210,906	44,777,905
North Dakota	2,189,300	132,850	2,322,150
Oklahoma	86,339		86,339
Oregon	12,188,457	4,769,456	16,957,913
South Dakota	6,414,049	147,246	6,561,295
Utah	11,901,823	24,677,175	36,578,998
Washington	2,347,825	2,287,176	4,635,001
Wisconsin	13,280		13,280
Wyoming	34,492,943	2,652,359	37,145,302
Grand total	226,690,938	528,204,358	754,895,296

A circular showing areas unappropriated, by counties, has been published and is distributed on request.

Public lands remaining unsurveyed.

State.	Total land area of State.	Areas surveyed during fiscal year ended June 30, 1908.	Areas remaining unsurveyed on June 30, 1908.
	Acres.	*Acres.*	*Acres.*
Alaska	378,165,760	5,175	378,151,730
Arizona	72,857,600	234,269	52,510,304
California	99,898,880	4,801	22,391,977
Colorado	66,341,120	688,923	1,967,488
Florida	35,111,040	36,622	4,198,481
Idaho	53,618,560	732,162	29,854,404
Louisiana	29,061,760		1,884,764
Minnesota	51,749,120	90,747	2,372,303
Montana	93,296,640	1,607,965	44,735,158
Nevada	70,285,440	64,773	30,963,756
New Mexico	78,401,920	433,341	25,867,639
North Dakota	44,917,120	185,790	2,739,047
South Dakota	49,195,520	280,091	447,769
Oregon	61,188,480	273,316	12,617,584
Utah	52,597,760	354,159	27,839,579
Washington	42,775,040	193,150	12,180,789
Wyoming	62,460,160	616,650	4,317,312
Total	1,341,921,920	5,801,934	655,040,084

Estimated area of existing national forests, June 30, 1908.

	Acres.
Alaska	12,087,626
Arizona	13,385,990
Arkansas	1,991,899
California	25,605,709
Colorado	15,746,932
Idaho	20,336,427
Kansas	302,387
Minnesota	294,752
Montana	20,402,676
Nebraska	556,072
Nevada	2,591,052
New Mexico	8,474,547
Oklahoma	60,800
Oregon	16,331,892
Porto Rico	65,950
South Dakota	1,263,720
Utah	7,414,232
Washington	12,065,500
Wyoming	8,998,723
Total area	167,976,886

	Acres.
Area embraced in national forests established during year	11,789,847
Area embraced in national forests reduced during year	27,650,701
Area embraced in national forests enlarged during year	26,341,584
Area embraced in temporary withdrawals, June 30, 1908	11,418,220
Estimated area in existing national forests, June 30, 1907	150,831,665
Estimated area in existing national forests, June 30, 1908	167,976,886

National monuments.

State and name.	Date created.	Area.
Arizona:		*Acres.*
Grand Canyon[a]	Jan. 11, 1908	806,400.00
Montezuma Castle	Dec. 8, 1906	160.00
Petrified Forest	....do.....	6,776.02
Tonto[a]	Dec. 19, 1907	640.00
California:		
Cinder Cone[a]	May 6, 1907	5,120.00
Lassen Peak[a]	....do.....	1,280.00
Muir Woods	Jan. 9, 1908	295.00
Pinnacles[a]	Jan. 16, 1908	2,080.00
Montana:		
Lewis and Clark	May 11, 1908	160.00
New Mexico:		
Chaco Canyon	May 6, 1907	20,629.40
El Morro	Dec. 8, 1906	160.00
Gila Cliff Dwellings[a]	Nov. 16, 1907	160.00
South Dakota:		
Jewel Cave[a]	Feb. 7, 1908	1,280.00
Utah:		
Natural Bridges	Apr. 16, 1908	.....
Wyoming:		
Devils Tower	Sept. 24, 1906	1,152.91

[a] Under jurisdiction of Department of Agriculture.

Aggregate cash receipts from the disposal of public and Indian lands from May 20, 1785, to June 30, 1908.

Fiscal year.	Cash sales.	Amount of fees and commissions.	Total receipts from disposal of public lands.	Receipts from sales of Indian lands.	Miscellaneous receipts.	Aggregate receipts from all sources.
May 20, 1785, to June 30, 1880						$208,059,657.14
1881	$3,534,550.98	$860,833.65	$4,395,384.63	$1,006,691.63	$6,727.90	5,408,804.16
1882	6,628,775.92	1,124,531.15	7,753,307.07	634,617.22	6,591.75	8,394,516.04
1883	9,657,032.28	1,423,329.10	11,080,361.38	625,404.27	8,118.05	11,713,883.70
1884	10,304,582.49	1,536,410.58	11,840,993.07	938,137.26	10,274.76	12,789,405.09
1885	6,223,926.74	1,462,188.06	7,686,114.80	933,483.52	8,821.86	8,628,420.18
1886	5,757,891.06	1,654,876.25	7,412,767.31	1,607,729.63	10,587.40	9,031,084.34
1887	9,246,321.33	1,537,600.39	10,783,921.72	1,484,302.30	20,784.85	12,289,008.87
1888	11,203,071.95	1,498,000.05	12,701,072.00	821,113.77	24,951.65	13,547,137.42
1889	8,018,254.50	1,251,971.23	9,270,225.73	389,524.72	26,150.89	9,685,901.34
1890	6,349,174.24	1,121,696.07	7,470,870.31	293,062.30	16,585.00	7,780,517.61
1891	4,160,099.07	944,938.65	5,105,037.72	318,333.42	5,849.00	5,429,220.14
1892	3,322,865.01	1,064,805.26	4,387,670.27	456,681.84	15,757.58	4,860,109.69
1893	3,193,280.64	998,184.65	4,191,465.29	284,752.65	3,516.20	4,479,734.14
1894	1,653,080.71	1,021,205.08	2,674,285.79	91,981.03	1,557.50	2,767,824.32
1895	1,116,090.07	750,710.59	1,866,800.66	149,879.48	16,773.89	2,033,454.03
1896	1,053,905.59	793,557.82	1,847,463.41	214,700.42	44,197.84	2,106,361.67
1897	917,911.19	678,469.55	1,596,380.74	438,716.31	52,834.23	2,087,931.28
1898	1,291,076.10	853,265.50	2,144,341.60	100,317.49	33,336.09	2,277,995.18
1899	1,703,988.32	890,702.17	2,594,690.49	442,913.73	32,533.12	3,070,137.34
1900	2,899,731.83	1,157,081.03	4,056,812.86	239,769.39	83,175.85	4,379,758.10
1901	2,966,542.86	1,340,894.29	4,307,437.15	585,661.27	79,062.37	4,972,160.79
1902	4,139,268.47	1,740,820.18	5,880,088.65	288,666.68	93,171.85	6,261,927.18
1903	8,960,471.18	1,597,147.48	10,557,618.66	308,939.14	158,185.85	11,024,743.65
1904	7,445,902.84	1,349,990.89	8,795,893.73	333,757.62	153,690.63	9,283,341.98
1905	4,849,766.06	1,286,621.93	6,136,387.88	791,807.67	89,615.72	7,017,811.38
1906	4,885,988.82	1,642,488.56	6,528,477.38	967,532.50	89,514.02	7,585,523.90
1907	7,728,114.30	1,819,159.21	9,547,273.51	1,892,805.70	113,098.79	11,553,178.00
1908	9,760,570.19	1,731,883.57	11,492,453.76	997,972.52	225,283.18	12,715,709.46
Total						411,235,258.12

Amounts accrued and paid to States for educational purposes on account of grants of 2, 3, and 5 per cent of net proceeds of sales of public lands.

State.	Total to June 30, 1906.	Fiscal year 1907.	Aggregate to June 30, 1907, inclusive.
Alabama	$1,072,758.36	$1,439.64	$1,074,198.00
Arkansas	291,076.42	8,734.03	299,810.45
California	973,192.59	16,852.31	990,044.90
Colorado	353,747.89	17,046.81	370,794.70
Florida	122,043.38	3,774.36	125,817.74
Idaho	141,155.81	32,858.24	174,014.05
Illinois	1,187,908.89		1,187,908.89
Indiana	1,040,255.26		1,040,255.26
Iowa	633,638.10		633,638.10
Kansas	1,097,260.27	1,738.28	1,098,998.55
Louisiana	458,419.16	3,837.29	462,256.45
Michigan	580,800.49	1,956.58	582,757.07
Minnesota	525,010.58	12,248.85	537,259.43
Mississippi	1,068,466.95	1,069.67	1,069,536.62
Missouri	1,044,774.65	5,618.70	1,050,393.35
Montana	216,288.62	33,982.61	250,271.23
Nebraska	531,341.48	1,271.32	532,612.80
Nevada	15,237.17	1,998.55	17,235.72
New Mexico	24,790.72	6,685.77	31,476.49
North Dakota	245,951.94	44,403.07	290,355.01
Ohio	999,353.01		999,353.01
Oregon	493,343.63	74,011.17	567,354.80
South Dakota	89,831.13	19,012.25	108,843.38
Utah	30,089.53	6,436.00	36,525.53
Washington	278,992.67	31,535.35	310,528.02
Wisconsin	584,104.69	775.89	584,880.58
Wyoming	98,524.30	17,100.14	115,624.44
Total	14,198,357.69	344,386.88	14,542,744.57

Amounts covered into the Treasury to the credit of the reclamation fund from the sales of public lands and fees and commissions in the several States and Territories under the act of June 17, 1902 (32 Stat. L., 388).

State or Territory.	Fiscal years—		Total for seven years ending June 30, 1907.
	1901 to 1906.	1907.	
Arizona	$298,327.25	$71,688.72	$370,015.97
California	2,562,377.70	365,995.19	2,928,372.89
Colorado	2,503,802.05	613,520.03	3,117,322.08
Idaho	2,349,875.08	650,690.09	3,000,565.17
Kansas	215,245.19	88,937.79	304,182.98
Montana	2,633,324.55	740,552.33	3,373,876.88
Nebraska	746,553.81	73,533.61	820,087.42
Nevada	100,772.25	45,154.36	145,926.61
New Mexico	723,365.27	382,856.77	1,106,222.04
North Dakota	5,373,604.90	1,101,638.16	6,475,243.06
Oklahoma	3,642,029.10	530,664.25	4,172,693.35
Oregon	5,260,449.82	1,519,958.62	6,780,408.44
South Dakota	1,302,472.68	505,779.42	1,808,252.10
Utah	476,671.41	141,156.18	617,827.59
Washington	3,541,391.57	703,902.62	4,245,294.19
Wyoming	1,512,181.89	378,103.57	1,890,285.46
Total	33,242,444.52	7,914,131.71	41,156,576.23

Amount of collections from reclamation water-right charges during the fiscal year ended June 30, 1908.

[No water right charges collected prior to July 1, 1907.]

State.	Land office.	Project.	Receipts.
Idaho	Hailey	Minidoka	$5,706.18
Montana	Billings	Huntley	38,431.85
	Great Falls	Sun River	1,631.00
Nevada	Carson City	Truckee-Carson	8,447.95
North Dakota	Williston	Buford-Trenton	423.00
Oregon	La Grande	Umatilla	350.00
Wyoming	Lander	Shoshone	8,412.53
Total			63,402.51

Entries examined in General Land Office during fiscal year ended June 30, 1908.

Kind of entry.	Pending June 30, 1907.	Received.	Total.	Approved.	Canceled.	Otherwise disposed of.	Total.	Pending June 30, 1908.
Homesteads:								
Original	270,314	97,632	367,946	.....	32,340	51,687	84,027	283,919
Final	4,830	29,222	34,052	25,496	95	1,721	27,312	6,740
Commuted	2,061	23,441	25,502	19,504	106	815	20,425	5,077
Soldiers additional	1,440	782	2,222	413	289	.....	702	1,520
Timber and stone	3,865	12,482	16,347	11,750	14	1,551	13,315	3,032
Desert land:								
Original	21,747	11,058	32,805	.....	4,851	2,564	7,415	25,390
Final	.....	.....	.....	2,462	.....	.....	2,462	.....
Yearly proofs examined	.....	.....	.....	.....	.....	.....	8,941	.....
Assignments examined	.....	.....	.....	.....	.....	.....	753	.....
Mineral:								
Applications	.....	.....	.....	.....	179	.....	179	.....
Final	1,570	1,339	2,909	1,762	85	.....	1,847	1,062
Coal:								
Declaratory statements	.....	.....	.....	.....	14	.....	14	.....
Final	396	217	613	188	17	.....	205	408
Timber culture:								
Original	136	153	289	.....	134	14	148	141
Final	.....	.....	.....	29	.....	.....	29	.....
Commuted	10	.....	10	2	.....	8	10	.....
Preemption:								
Original	329	237	566	228	2	30	260	306
Final	.....	.....	.....	228	.....	.....	228	.....
Indian allotments	5,199	8,116	13,315	10,117	.....	.....	10,117	3,198
Indian homesteads	48	31	79	8	.....	.....	8	71
Townsites	23	20	43	30	4	.....	34	9
Town lots	144	298	442	146	.....	.....	146	296
Isolated tracts:								
Applications	973	5,025	5,998	2,330	2,047	.....	4,377	1,621
Sales	202	622	824	557	1	13	571	253
Lieu selections (act June 4, 1907)	3,145	262	3,407	1,194	75	.....	1,269	2,138
Military bounty land warrants	1,452	35	1,487	209	19	.....	228	1,259
Miscellaneous entries	6,257	1,650	7,907	1,617	53	1,678	4,348	4,559

State and territorial grants.

Kind.	Pending and received.			Disposed of.			Pending June 30, 1908.
	On hand June 30, 1907.	Since received.	Total.	Approved.	Canceled.	Total.	
	Acres.	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*
School selections	1,673,934.12	478,414.19	2,152,348.31	1,047,860.86	56,575.98	1,104,436.84	1,047,911.47
University selections	119,347.38	3,504.42	122,851.80	12,850.20	79,493.61	92,343.81	30,507.99
Agricultural college selections	35,349.66	11,568.30	46,917.96	4,594.04	840.00	5,434.04	41,483.92
Improvement of the Rio Grande		16,562.29	16,562.29	16,562.29		16,562.29	
Internal improvement selections	560.07	40.00	600.07				600.07
Biological station	160.84		160.84				160.84
Penitentiary selections	3,758.90		3,758.90	3,709.00	49.90	3,758.90	
Public buildings	30,537.21	14,204.44	44,741.65	19,211.02	2,028.80	21,239.82	23,501.83
Insane asylums	19,287.80		19,287.80	13,029.71		13,029.71	6,258.09
Educational, charitable, penal, and reformatory	19,431.30	2,680.19	22,111.49	3,080.19	922.87	4,003.06	18,108.43
Deaf and dumb asylums	12,763.38	841.05	13,604.43	5,370.10	120.00	5,490.10	8,114.33
Reform schools	13,586.29		13,586.29	10,403.87		10,403.87	3,182.42
School of mines	22,105.32		22,105.32	11,356.86	1,743.73	13,100.59	9,004.73
Normal schools	32,229.75	1,000.40	33,230.15	16,660.41	1,622.75	18,283.16	14,946.99
Scientific schools	9,779.55		9,779.55	8,779.55		8,779.55	1,000.00
Blind asylums	16,983.35		16,983.35	13,259.89	32.27	13,292.16	3,691.19
Reservoirs	37,685.03	76,399.66	114,084.69	60,985.63	418.02	61,403.65	52,681.04
Miners' hospital	9,874.56		9,874.76	7,407.91		7,407.91	2,466.85
Two million acre grant, Nevada	849.24		849.24	275.00		275.00	574.24
Oklahoma Normal School	6,055.61	288,377.39	294,433.00	289,896.25	657.53	290,553.78	3,879.22
University	6,798.32	238,756.05	245,554.37	241,859.39	321.24	242,180.63	3,373.74
University Preparatory School	9,445.41	137,867.72	147,313.13	145,754.83	561.20	146,316.03	997.10
Agricultural and Mechanical College	9,244.30	237,337.59	246,581.89	239,625.30	469.95	240,095.25	6,486.64
Colored Agricultural and Normal University	4,052.63	94,295.76	98,348.39	94,328.29	379.08	94,707.37	3,641.02
Forestry, Wisconsin		19,998.39	19,998.39				19,998.39
Specific grant total	419,885.90	1,143,433.85	1,563,319.75	1,218,999.73	89,660.95	1,308,660.68	254,659.07
Grand total	2,093,820.02	1,621,848.04	3,715,668.06	2,266,860.59	146,236.93	2,413,097.52	1,302,570.54

State and territorial grants—Recapitulation.

State or Territory.	Indemnity school land.			Other grants.		
	Pending and selected.	Confirmed.	Canceled.	Pending and selected.	Confirmed.	Canceled.
	Acres.	*Acres.*	*Acres.*	*Acres.*	*Acres.*	*Acres.*
Alabama	960.00		960.00			
Arizona				1,120.00		
California	403,520.13	640.00	6,105.30			
Colorado	302,434.21	219,727.67	6,349.45	80.00		80.00
Florida	2,755.27	723.27	1,154.84			
Idaho	220,265.05	174,404.11	15,188.11	34,340.71	22,239.58	1,442.87
Louisiana	14,092.29	897.20				
Minnesota	57,911.65	57,094.80	696.85			
Mississippi	960.41					
Missouri				120.00		120.00
Montana	244,640.90	111,731.43	3,520.00	17,608.98	160.00	1,040.00
Nebraska	1,065.12	1,065.12				
Nevada				9,062.04	7,757.83	129.90
New Mexico				170,778.67	78,552.39	79,493.61
North Dakota	15,821.18	9,071.02	1,997.40	15,237.56	13,088.76	908.80
Oklahoma	15,315.58	14,355.03	360.55	1,032,230.78	1,011,464.06	2,389.00
Oregon	102,825.57	61,559.80	4,859.05			
South Dakota	43,798.41	24,538.47	3,919.87			
Utah	307,124.81	170,032.32	2,040.00	234,523.91	82,358.55	3,416.77
Washington	188,609.95	96,645.38	5,660.06	3,022.42		640.00
Wisconsin				19,998.39		
Wyoming	230,247.78	105,075.24	3,764.50	25,196.29	3,378.56	
Total	2,152,348.31	1,047,860.86	56,575.98	1,563,319.75	1,218,999.73	89,660.95

Alleged fraudulent entries acted on during year.

	Received.	Approved.	Canceled.	Referred.	Pending June 30, 1908.
Homestead:					
Originals	4,103		2,214	5,093	8,617
Finals	533	577	85	1,324	529
Commuted	419	527	174	1,097	1,281
Desert:					
Originals	481		184	930	824
Finals	207	159	44	509	265
Timber culture:					
Originals	27		9	17	29
Finals	20	13	31	72	111
Timber and stone:					
Sworn statements	746		80	803	1,537
Finals	623	1,380	60	1,401	1,092
Mineral:					
Applications	245		2	106	206
Finals	287		2	127	393
Selections:					
State	112			75	56
Forest	21			55	22
Indian allotments	3			53	58
Total	8,127	2,956	2,885	11,662	15,020

Indictments, convictions, and acquittals June 30, 1907–June 30, 1908.

	Indictments.	Convictions.	Acquittals.
Timber trespass	16	8	14
Perjury	34	8	7
Subornation of perjury	4		
Conspiracy	95	6	28
Forgery	4		
Securing false affidavits	8	3	2
Boxing trees	5	7	
Unlawful inclosure	64	31	5
Forest fires	2		2
Misappropriations funds of United States	2		2
Total	234	63	60

Number and kind of patents issued during fiscal year ended June 30, 1908.

Cash (timber or stone, commuted homestead, etc.)	43,356	Arredonda scrip	1
Homestead	29,176	Ware scrip	7
Forest reserve lieu selection	1,058	State desert land segregation	6
Military bounty land warrants	187	Donation claims	18
Timber culture	93	Special act	16
Agricultural college scrip	7	Railroad	74
Surveyor-general's scrip	53	Swamp	25
Supreme Court scrip	5	Private land claim	133
Sioux half-breed scrip	3	Mineral	1,667
Choctaw scrip	4	Coal	148
Valentine scrip	13	Indian	14,470
Dodge scrip	1	Total	90,522
Porterfield	1		

Cases approved and awaiting patent 6,975

Entries made and expenses incurred at district land offices during fiscal year ended June 30, 1908.

Location.	Number of applications, entries, etc.	Area entered (acres).	Receipts.			Expenses.		
			Fees and commissions.	Sales of land.	Total.	Salaries and commissions of register and receiver.	Incidental expenses.	Total.
Alabama:								
Montgomery	1,579	80,576.44	$10,092.99	$23,333.88	$33,426.87	$5,805.90	$2,521.36	$8,327.26
Alaska:								
Fairbanks	34		102.00		102.00	102.00	14.50	116.50
Juneau	628	2,968.92	2,332.92	16,992.83	19,325.75	5,575.52	1,078.01	6,653.53
Nome	52	865.88	251.00	1,380.00	1,631.00	268.54		268.54
Arizona:								
Phoenix	1,888	198,509.64	17,521.23	53,347.10	70,868.33	5,808.32	2,741.23	8,549.55
Arkansas:								
Camden	1,967	93,720.79	11,933.59	123,363.34	135,296.93	6,000.00	2,384.63	8,384.63
Dardanelle	937	52,269.41	5,940.42	65,849.27	71,789.69	6,000.00	1,442.65	7,442.65
Harrison	1,914	109,784.83	13,282.74	46,726.88	60,009.62	6,000.00	2,531.51	8,531.51
Little Rock	1,331	77,901.38	9,009.17	64,674.75	73,743.92	6,000.00	1,480.00	7,480.00
California:								
Eureka	590	41,704.05	4,585.50	73,712.41	78,297.91	6,000.00	884.64	6,884.64
Independence	225	26,317.48	1,670.82	14,231.95	15,902.77	2,610.40	369.76	2,980.16
Los Angeles	1,887	311,760.75	8,504.49	78,572.17	87,076.66	6,000.00	4,543.68	10,543.68
Oakland	928	79,959.61	8,616.69	28,496.91	37,113.60	5,412.74	3,302.96	8,715.70
Redding	1,038	73,000.47	7,574.04	128,637.82	136,211.86	6,000.00	1,992.97	7,992.97
Sacramento	988	78,366.00	8,090.35	88,758.63	96,848.98	6,000.00	2,478.19	8,478.19
Susanville	757	66,117.45	5,338.47	96,707.80	102,046.27	6,000.00	621.93	6,621.93
Visalia	569	64,295.14	5,690.35	19,097.79	24,788.14	4,927.28	435.04	5,362.32
Colorado:								
Del Norte	478	69,933.68	3,443.92	14,616.32	18,060.24	2,921.24	268.54	3,189.78
Denver	3,542	415,997.82	35,887.94	120,925.46	156,813.40	6,000.00	5,141.45	11,141.45
Durango	589	37,261.13	5,111.21	26,748.18	31,859.39	5,037.80	1,608.83	6,646.63
Glenwood Springs	709	61,958.74	5,698.83	130,246.58	135,945.41	6,000.00	1,778.63	7,778.63
Hugo	2,944	362,927.78	43,299.08	90,526.82	133,825.90	6,000.00	3,252.29	9,252.29
Lamar	2,283	303,362.23	27,729.61	49,075.47	76,805.08	6,000.00	2,324.87	8,324.87
Leadville	162	8,402.06	1,447.75	5,672.71	7,120.46	2,036.75	15.40	2,052.15
Montrose	975	75,585.54	10,217.73	7,937.21	18,154.94	6,000.00	1,779.65	7,779.65
Pueblo	2,712	335,464.71	26,959.68	72,582.07	99,541.75	6,000.00	4,102.41	10,102.41
Sterling	2,628	344,609.36	33,074.65	52,819.27	85,893.92	6,000.00	1,948.44	7,948.44
Florida:								
Gainesville	1,638	82,526.44	10,220.47	64,250.40	74,470.87	6,000.00	5,174.22	11,174.22
Idaho:								
Blackfoot	2,499	249,905.94	20,018.47	56,920.59	76,939.06	6,000.00	2,500.25	8,500.25
Boise	2,590	260,354.91	17,214.29	79,106.43	96,320.72	6,000.00	3,830.18	9,830.18
Coeur d'Alene	1,641	102,266.12	15,298.30	140,471.00	155,769.30	6,000.00	2,985.08	8,985.08
Hailey	2,721	372,083.75	13,310.22	34,564.33	47,874.55	6,000.00	2,369.44	8,369.44
Lewiston	1,761	102,792.22	12,660.52	149,603.58	162,264.10	6,000.00	2,953.09	8,953.09

Entries made and expenses incurred at district land offices during fiscal year ended June 30, 1908—Continued.

Location.	Number of applications, entries, etc.	Area entered (acres).	Receipts.			Expenses.		
			Fees and commissions.	Sales of land.	Total.	Salaries and commissions of register and receiver.	Incidental expenses.	Total.
Iowa:								
Des Moines	7	120.00	$201.05	$116.75	$317.80	$1,192.38	$2.26	$1,194.64
Kansas:								
Colby	740	51,230.42	7,492.63	25,424.42	32,917.05	5,761.08	1,646.96	7,408.04
Dodge City	2,659	274,098.98	28,662.67	101,306.02	129,968.69	6,000.00	5,456.48	11,456.48
Topeka	59	1,955 13	443.81	850.25	1,294.06	1,311.19	64.92	1,376.11
Louisiana:								
Natchitoches	546	16,670.14	3,408.71	26,517.19	29,925.90	4,119.02	301.02	4,420.04
New Orleans	1,300	42,333.26	7,275.29	52,946.68	60,221.97	6,000.00	3,688.04	9,688.04
Michigan:								
Marquette	827	46,147.59	7,356.60	43,731.48	51,088.08	6,000.00	2,228.13	8,228.13
Minnesota:								
Cass Lake	1,768	103,360.77	13,596.36	57,298.16	70,894.52	6,000.00	2,775.48	8,775.48
Crookston	1,417	100,001.79	14,148.35	8,770.88	22,919.23	6,000.00	2,759.55	8,759.55
Duluth	3,798	218,853.93	24,382.66	358,346.28	382,728.94	6,000.00	3,833.93	9,833.93
Mississippi:								
Jackson	1,006	35,545.37	5,546.21	17,041.65	22,587.86	4,106.99	2,301.65	6,408.64
Missouri:								
Springfield	1,710	128,877.20	6,697.40	112,197.18	118,894.58	5,808.37	2,349.20	8,157.57
Montana:								
Billings	996	99,098.06	13,172.24	33,161.78	46,334.02	6,000.00	2,565.84	8,565.84
Bozeman	920	87,298.03	10,093.99	36,471.58	46,565.57	6,000.00	1,675.38	7,675.38
Glasgow	1,420	159,685.71	15,222.07	37,828.27	53,050.34	6,000.00	2,189.05	8,189.05
Great Falls	1,908	188,804.50	9,548.36	102,836.33	112,384.69	6,000.00	3,445.23	9,445.23
Helena	2,357	269,588.87	10,564.34	91,200.52	101,764.86	6,000.00	2,456.82	8,456.82
Kalispell	537	25,434.89	4,418.83	54,070.83	58,489.66	6,000.00	1,440.40	7,440.40
Lewistown	2,808	318,561.93	23,164.67	106,805.83	129,970.50	6,000.00	1,584.45	7,584.45
Miles City	2,211	295,797.26	29,433.74	37,648.26	67,082.00	6,000.00	2,305.06	8,305.06
Missoula	856	49,782.77	5,658.04	82,255.87	87,913.91	5,729.64	2,952.30	8,681.94
Nebraska:								
Alliance	1,869	579,731.00	21,357.47	13,105.55	34,463.02	6,000.00	2,806.63	8,806.63
Broken Bow	924	370,327.30	10,727.72	7,896.23	18,623.95	5,355.66	1,564.96	6,920.62
Lincoln	357	65,510.65	3,521.20	7,861.69	11,382.89	2,848.38	90.04	2,938.42
North Platte	1,150	354,901.78	15,008.15	12,413.67	27,416.82	6,000.00	1,941.12	7,941.12
O'Neill	484	93,404.49	5,321.07	6,300.43	11,621.50	4,024.29	1,418.68	5,442.97
Valentine	918	317,748.58	9,206.67	22,297.30	31,505.97	5,154.60	1,605.07	6,759.67
Nevada:								
Carson City	1,039	60,131.50	7,551.93	57,516.32	65,068.25	6,000.00	2,665.58	8,665.58
New Mexico:								
Clayton	10,865	1,445,701.17	126,873.25	142,179.32	269,052.57	6,000.00	7,814.56	13,814.56
Las Cruces	971	121,123.81	8,972.20	25,370.25	34,342.45	5,399.56	1,661.22	7,060.78

Roswell	5,922	789,034.10	67,352.20	105,679.11	173,031.31	6,000.00	5,695.36	11,695.36
Santa Fe	4,316	534,478.03	49,575.64	51,368.58	100,980.22	6,000.00	3,315.36	9,315.36
North Dakota:								
Bismarck	5,275	305,758.32	46,993.06	285,544.17	332,537.23	6,000.00	6,580.72	12,580.72
Devils Lake	2,402	73,283.23	13,147.45	106,255.09	119,402.57	6,000.00	4,287.53	10,287.53
Dickinson	5,734	593,759.79	62,124.22	249,206.83	311,331.05	6,000.00	4,944.05	10,944.05
Fargo	1,125	55,712.44	10,296.32	61,092.92	71,389.24	6,000.00	880.90	6,880.90
Minot	5,874	142,578.68	26,187.61	614,375.80	640,563.41	6,000.00	8,021.75	14,021.75
Williston	4,615	212,864.73	24,207.68	526,452.36	550,660.04	6,000.00	5,341.87	11,341.87
Oklahoma:								
Alva	441	20,356.01	3,312.08	5,292.09	8,604.17	2,764.79	164.94	2,929.73
Kingfisher	991	10,084.47	4,873.03	43,425.49	48,298.52	5,974.24	1,706.04	7,680.28
Guthrie	2,224	56,453.64	13,782.76	28,967.97	42,750.73	6,000.00	4,492.30	10,492.30
Lawton	2,027	49,429.58	10,360.15	96,288.31	106,648.46	6,000.00	3,254.13	9,254.13
Woodward	6,577	377,885.88	46,450.23	363,853.01	410,303.24	6,000.00	8,260.84	14,260.84
Oregon:								
Burns	1,494	148,683.48	11,168.21	95,385.62	106,553.83	6,000.00	1,804.31	7,804.31
La Grande	2,754	216,093.01	19,999.03	298,347.27	318,346.30	6,000.00	3,882.01	9,882.01
Lakeview	1,312	119,311.62	9,486.28	149,192.84	158,679.12	6,000.00	1,631.59	7,631.59
Portland	1,220	79,037.66	10,065.88	125,121.06	135,186.94	6,000.00	2,027.45	8,027.45
Roseburg	3,798	255,925.46	26,435.86	417,074.09	443,509.95	6,000.00	7,691.76	13,691.76
The Dalles	3,123	192,901.47	21,046.69	308,519.35	329,566.04	6,000.00	4,749.65	10,749.65
South Dakota:								
Aberdeen	807	31,488.28	5,318.36	45,586.98	50,905.34	5,162.18	1,299.82	6,462.00
Chamberlain	4,065	217,209.47	25,652.01	213,691.04	239,343.05	6,000.00	4,887.35	10,887.35
Huron	297	8,199.28	1,741.41	14,925.23	16,666.64	2,234.57	278.64	2,513.21
Mitchell	193	15,483.71	4,048.09	3,949.78	7,997.87	4,048.33	2,368.16	6,416.49
Pierre	5,302	528,657.98	52,089.30	126,329.09	178,418.39	6,000.00	5,195.34	11,195.34
Rapid City	10,384	1,285,133.10	109,928.49	207,130.31	317,058.80	6,000.00	7,391.46	13,391.46
Utah:								
Salt Lake City	2,784	381,131.90	9,985.14	142,747.49	152,732.63	6,000.00	3,004.59	9,004.59
Vernal	662	87,296.93	9,739.62	6,450.28	16,189.90	5,848.86	1,716.72	7,565.58
Washington:								
North Yakima	1,580	165,608.99	15,653.39	100,731.59	116,384.98	6,000.00	2,603.39	8,603.39
Olympia	384	23,106.57	3,382.86	39,874.46	43,257.32	4,598.65	422.70	5,021.35
Seattle	935	46,628.57	7,469.90	91,377.64	98,847.54	6,000.00	3,398.28	9,398.28
Spokane	2,841	189,045.33	26,677.81	233,747.94	259,425.75	6,000.00	5,521.55	11,521.55
Vancouver	1,579	109,595.23	11,523.15	157,537.49	169,060.64	6,000.00	2,081.70	8,081.70
Walla Walla	1,440	94,565.34	15,837.72	77,185.76	93,023.48	6,000.00	3,193.22	9,193.22
Waterville	2,600	173,934.10	26,516.73	100,870.31	127,387.04	5,987.50	3,508.55	9,496.05
Wisconsin:								
Wausau	1,251	57,595.61	8,151.23	19,627.47	27,778.70	5,746.42	1,693.10	7,439.52
Wyoming:								
Buffalo	1,211	101,655.79	8,499.20	89,186.72	97,675.92	6,000.00	1,836.90	7,836.00
Cheyenne	2,102	242,820.90	26,861.52	57,854.02	84,715.54	6,000.00	2,398.50	8,398.50
Douglas	989	101,551.57	8,176.11	64,273.96	72,450.07	6,000.00	1,265.86	7,265.86
Evanston	1,204	137,845.36	5,546.43	71,443.14	76,989.57	5,850.75	244.20	6,094.95
Lander	971	92,849.45	7,926.84	153,618.23	161,545.07	6,000.00	1,306.67	7,306.67
Sundance	1,536	152,891.12	14,084.48	109,277.38	123,361.86	6,000.00	1,484.31	7,484.31
Indiana	1	10.08	5.25		5.25			

Entries made and expenses incurred at district land offices during fiscal year ended June 30, 1908—Continued.

RECAPITULATION BY STATES.

Location.	Number of applications, entries, etc.	Area entered (acres).	Receipts.			Expenses.		
			Fees and commissions.	Sales of land.	Total.	Salaries and commissions of register and receiver.	Incidental expenses.	Total.
Alabama	1,579	80,576.44	$10,092.99	$23,333.88	$33,426.87	$5,805.90	$2,521.36	$8,327.26
Alaska	714	3,834.80	2,685.92	18,372.83	21,058.75	5,946.06	1,092.51	7,038.57
Arizona	1,888	198,509.64	17,521.23	53,347.10	70,868.33	5,808.32	2,741.23	8,549.55
Arkansas	6,149	333,676.41	40,225.92	300,614.24	340,840.16	24,000.00	7,838.79	31,838.79
California	6,982	741,520.95	50,070.71	528,215.48	578,286.19	42,950.42	14,629.17	57,579.59
Colorado	17,022	2,015,503.05	192,870.40	571,150.09	764,020.49	51,995.79	22,220.51	74,216.30
Florida	1,638	82,526.44	10,220.47	64,250.40	74,470.87	6,000.00	5,174.22	11,174.22
Idaho	11,212	1,087,402.94	78,501.80	460,665.93	539,167.73	30,000.00	14,638.04	44,638.04
Iowa	7	120.00	201.05	116.75	317.80	1,192.38	2.26	1,194.64
Kansas	3,458	327,284.53	36,599.11	127,580.69	164,179.80	13,072.27	7,168.36	20,240.63
Louisiana	1,846	59,003.42	10,684.00	79,463.87	90,147.87	10,119.02	3,989.06	14,108.08
Michigan	827	46,147.59	7,356.60	43,731.48	51,088.08	6,000.00	2,228.13	8,288.13
Minnesota	6,983	422,216.49	52,127.37	424,415.32	476,542.69	18,000.00	9,368.96	27,368.96
Mississippi	1,006	35,545.37	5,546.21	17,041.65	22,587.86	4,106.99	2,301.65	6,408.64
Missouri	1,710	128,877.20	6,697.40	112,197.18	118,894.58	5,808.37	2,349.20	8,157.57
Montana	14,013	1,494,052.02	121,276.28	582,279.27	703,555.55	53,729.64	20,614.53	74,344.17
Nebraska	5,702	1,781,623.80	65,139.28	69,874.87	135,014.15	29,382.93	9,426.50	38,809.43
Nevada	1,039	60,131.50	7,551.93	57,516.32	65,068.25	6,000.00	2,665.58	8,665.58
New Mexico	22,074	2,850,337.11	252,773.29	324,592.26	577,365.55	23,399.56	18,486.50	41,886.06
North Dakota	25,025	1,383,957.19	182,956.37	1,842,927.17	2,025,883.54	36,000.00	30,056.82	66,056.82
Oklahoma	12,260	514,159.58	78,778.25	537,826.87	616,605.12	26,739.03	17,878.25	44,617.28
Oregon	13,701	1,011,952.70	98,201.95	1,393,640.23	1,491,842.18	36,000.00	21,486.77	57,486.77
South Dakota	21,048	2,086,171.82	198,777.66	611,612.43	810,390.09	29,445.08	21,420.77	50,865.85
Utah	3,440	468,428.83	19,724.76	149,197.77	168,922.53	11,848.86	4,721.31	16,570.17
Washington	11,359	802,484.13	106,061.56	801,325.19	907,386.75	40,586.15	21,329.39	61,915.54
Wisconsin	1,251	57,595.61	8,151.23	19,627.47	27,778.70	5,746.42	1,693.10	7,439.52
Wyoming	8,013	829,614.19	71,084.58	545,653.45	616,738.03	35,850.75	8,535.54	44,386.29
Indiana	1	10.08	5.25		5.25			
Total		18,903,263.83			11,492,453.76			
Swamp lands patented		35,622.93						
Sales of Indian lands		151,470.02			997,972.52			
Depredations, government property, copies of records, reclamation water-right charges, etc.					225,283.18			
Grand total	201,953	19,090,356.78	1,731,883.57	9,760,570.19	12,715,709.46	565,533.94	276,578.51	842,112.45

Recapitulation by classes of entries.

State or Territory.	Sales of land at public auction.			Sales of land subject to preemption entry.			Sales of timber and stone lands.			Sales of mineral lands.			Sales of coal lands.			Sales of abandoned military reservations.		
	Entries.	Acres.	Amount.	Entries.	Acres.	Amount.	Entries.	Acres.	Amount.	Entries.	Acres.	Amount.	Entries.	Acres.	Amount.	Entries.	Acres.	Amount.
Alabama	4	199.74	$469.35				53	3,753.52	$9,386.78									
Alaska										33	1,653.30	$6,415.00	8	1,195.78	$11,957.83			
Arizona										117	8,861.19	37,815.00						
Arkansas	5	247.93	309.92				836	93,631.10	234,080.08	41	4,377.00	11,055.00						
California	27	1,902.72	3,216.72				1,103	151,161.33	378,103.37	141	14,462.87	44,899.22						
Colorado	95	7,892.20	15,450.08				175	20,210.20	50,525.39	339	7,580.07	34,887.50	78	11,823.08	129,007.10			
Florida	1	40.00	50.00				153	14,187.54	35,499.18	7	800.98	2,015.00						$344.63
Idaho	2	80.00	100.00	5	680.00	$850.00	965	117,784.05	298,739.62	93	5,063.88	23,762.50				141		14,811.50
Iowa																		
Kansas	36	2,724.23	4,217.30															
Louisiana							341	24,684.26	61,711.53									
Michigan							194	16,174.20	40,435.58									
Minnesota	1	19.50	24.38				1,286	154,287.86	385,726.33									
Mississippi							30	1,987.46	4,968.75									
Missouri																		
Montana	110	8,642.12	13,998.80	82	10,146.39	12,696.42	652	79,190.50	197,986.53	186	7,873.79	31,469.78	24	2,821.80	48,964.90			1,251.10
Nebraska	273	39,373.60	53,652.53															2,705.58
Nevada							1	111.67	279.18	204	10,312.30	51,070.00						
New Mexico	8	463.36	619.20							29	1,637.12	7,785.00	5	399.41	7,988.40	1		135.97
North Dakota	282	14,376.55	35,004.86				20	2,123.37	5,308.43				15	840.00	10,800.00			
Oklahoma	2	160.00	200.00													16	640.00	3,020.00
Oregon	85	6,825.26	9,777.35	1	40.00	100.00	3,687	489,941.12	1,224,844.87	37	2,194.48	10,100.00	12	2,323.22	23,232.20			
South Dakota	295	17,134.62	38,066.15				171	21,658.30	54,152.85	22	2,460.20	11,137.50	1	40.00	400.00			1,419.86
Utah	2	80.00	100.00				3	360.00	900.00	121	6,026.17	28,035.00	33	4,467.79	103,016.90	1		110.00
Washington	99	6,714.65	15,067.04	1	10.90	13.63	1,476	179,914.04	449,785.32	22	1,606.90	8,091.00	43	7,105.55	84,751.80			
Wisconsin							79	4,976.01	12,440.05									
Wyoming	70	6,443.03	10,032.63				494	61,295.39	153,234.06	36	3,022.49	11,240.00	84	13,784.40	216,544.05	13	983.66	1,561.58
Total	1,397	113,319.61	200,356.31	89	10,877.29	13,660.05	11,719	1,437,431.92	3,598,108.20	1,428	77,932.74	319,777.50	303	44,821.12	636,663.18	172	1,623.66	25,383.22

Recapitulation by classes of entries—Continued.

State or Territory.	Desert land entries.						Excess payments on homestead and other entries.		
	Entries.		Area.		Amount.		Entries.	Acres.	Amount.
	Original.	Final.	Original.	Final.	Original.	Final.			
Alabama							157	211.47	$265.33
Alaska									
Arizona	121	11	21,594.60	2,605.42	5,398.72	2,605.42	51	127.58	169.88
Arkansas							110	613.94	767.68
California	1,443	47	285,712.69	8,991.16	71,428.12	8,991.16	172	749.11	1,134.41
Colorado	1,938	202	363,437.93	34,045.33	90,860.62	34,045.33	814	3,103.96	4,447.46
Florida							144	163.64	204.95
Idaho	873	217	143,392.20	30,407.45	35,849.41	30,408.76	195	854.01	1,248.81
Indiana									
Iowa									
Kansas							83	199.94	296.81
Louisiana							58	129.75	163.07
Michigan							12	33.51	41.91
Minnesota							61	438.26	590.91
Mississippi							52	116.85	159.34
Missouri							19	71.12	88.89
Montana	1,174	859	198,269.11	149,128.78	49,568.04	149,138.80	295	1,272.56	2,047.80
Nebraska							317	1,369.23	1,716.85
Nevada	80	8	15,340.52	953.97	3,835.19	953.97	22	308.94	389.33
New Mexico	975	67	166,317.42	10,590.52	41,579.26	10,590.53	889	2,357.79	2,950.39
North Dakota	3	12	410.60	2,524.59	102.65	2,574.59	487	2,092.88	3,804.16
Oklahoma							88	134.98	169.48
Oregon	395	106	62,061.08	16,721.53	15,515.33	16,721.53	196	1,043.71	1,500.19
South Dakota	511	62	78,685.62	12,702.34	19,679.14	12,702.34	555	1,711.23	1,874.45
Utah	403	5	64,075.02	560.16	16,019.13	560.26	17	44.44	55.58
Washington	399	41	22,630.83	5,719.90	15,658.73	5,719.90	229	1,468.77	2,875.20
Wisconsin							4	20.47	32.73
Wyoming	641	605	101,100.12	94,425.84	25,275.76	94,425.88	189	790.39	1,153.85
Total	8,965	2,242	1,563,027.74	369,376.99	390,770.10	369,438.47	5,216	19,428.53	28,349.46

State or Territory.	Homestead entries.								
	Entries.			Area.			Amount.		
	Original.	Final.	Commuted.	Original.	Final.	Commuted.	Original.	Final.	Commuted.
Alabama	818	367	122	76,291.17	34,782.13	10,411.25	$7,679.87	$870.83	$13,015.79
Alaska	14	14		985.72	985.72			32.96	
Arizona	984	166	42	136,930.30	22,809.97	5,672.72	14,232.28	902.63	7,093.12
Arkansas	2,320	1,593	361	234,806.44	182,903.13	43,361.18	23,122.35	4,597.68	54,401.56
California	1,650	530	98	235,816.46	76,772.84	12,797.78	26,116.26	3,310.58	19,422.85
Colorado	10,148	960	912	1,554,570.24	146,835.69	142,988.13	170,236.63	6,217.28	209,271.28
Florida	612	392	171	67,145.39	45,236.15	20,353.33	6,474.83	1,130.28	25,442.23
Idaho	3,552	1,253	291	448,430.01	175,974.88	37,960.11	48,269.93	7,856.65	54,194.38
Indiana	1			10.08			5.25		
Iowa	2	2		120.00	108.77		16.00	5.44	
Kansas	2,174	530	597	324,120.36	78,427.13	88,622.78	30,678.23	2,651.63	122,984.96
Louisiana	411	542	149	32,827.65	47,772.80	12,539.55	3,663.20	1,451.65	17,559.37
Michigan	297	98	28	29,859.88	10,135.57	2,417.18	2,961.57	243.47	3,021.49
Minnesota	2,192	1,721	252	254,276.45	222,807.44	29,452.74	24,417.59	6,041.06	38,063.00
Mississippi	440	334	103	32,471.08	28,068.05	9,206.81	3,606.48	718.24	11,658.50
Missouri	503	399		39,216.19	36,146.01		4,274.75	966.01	
Montana	5,329	1,098	358	777,455.13	165,744.58	52,472.53	91,102.68	8,692.23	74,651.99
Nebraska	4,022	983	78	1,740,406.56	175,299.58	8,638.20	54,774.12	3,989.89	11,796.91
Nevada	329	56	3	33,898.07	5,782.16	475.46	3,777.57	291.11	788.65
New Mexico	15,105	1,252	1,289	2,338,866.03	192,832.02	202,095.79	235,579.46	7,399.38	252,805.38
North Dakota	9,405	5,502	8,785	1,340,437.97	844,851.61	1,023,236.63	133,784.81	27,601.47	1,785,255.58
Oklahoma	3,754	5,458	2,860	501,930.74	819,996.82	425,976.82	45,605.81	20,475.12	530,874.10
Oregon	2,668	1,572	465	374,067.58	232,322.71	67,650.46	40,204.53	9,934.69	91,015.63
South Dakota	12,792	1,042	5,063	1,962,153.69	152,993.57	781,560.22	173,474.55	4,050.15	472,129.14
Utah	834	80	2	116,358.54	11,900.35	252.80	12,064.54	476.00	316.00
Washington	3,185	2,478	813	429,637.52	369,767.22	118,035.57	53,258.86	20,971.20	214,013.57
Wisconsin	355	518	60	30,275.57	57,545.32	3,818.70	3,584.48	2,241.90	6,439.69
Wyoming	3,161	696	157	472,983.38	103,908.37	24,280.86	53,785.70	4,308.06	31,745.64
Total	87,057	29,636	23,059	13,586,348.20	4,242,710.59	3,124,277.61	1,266,995.29	147,427.59	4,047,960.81

Recapitulation by classes of entries—Continued.

State or Territory.	Applications for timber and stone lands.		Mineral applications.		Mineral protests.		Preemption filings.		Homestead filings.		Coal land filings.		Reservoir filings.		Town-site filings.		Cancellation fees.	Fees received for reducing testimony to writing, etc.	Applications to purchase coal land.		Valentine scrip filing.	
	No.	Fees.	No.	Fees.	No.	Fees.	No.	Fees.	No.	Fees.	No.	Fees.	No.	Fees.	No.	Fees.	Amount.	Amount.	No.	Fees.	No.	Fees.
Alabama	53	$530																$1,010.29				
Alaska			22	$220	10	$100					560	$1,680							53	$530		
Arizona			107	1,070	19	190							2	$6	2	$6		872.32				
Arkansas	835	8,350	26	260					22	$44							$16	3,835.89				
California	1,113	11,130	173	1,730	10	100			8	24	11	33	1	3			19	6,724.87				
Colorado	219	2,190	335	3,350	26	260	283	$849	90	270	106	318	3	9			70	8,340.36				
Florida	147	1,470	7	70														1,073.36				
Idaho	966	9,660	98	980	23	230	1	3	1	3	26	78			1	3	339	5,671.03			1	$1
Iowa																	1	178.61				
Kansas							12	24	14	28			3	6				3,195.25				
Louisiana	337	3,370																2,187.15				
Michigan	194	1,940															2	2,209.56				
Minnesota	1,286	12,860							2	4							92	6,709.96				
Mississippi	30	300															39	866.49				
Missouri																	12	1,429.64				
Montana	654	6,540	197	1,970	24	240	100	300	31	93	95	285	15	45			100	5,840.83				
Nebraska									25	50			1	2			111	6,192.27				
Nevada	1	10	265	2,650	37	370			3	9	17	51						389.25				
New Mexico			29	290	1	10	2	6	165	495	21	63	20	60				4,598.45				
North Dakota	21	210							31	62	87	174	105	210			506	19,467.75				
Oklahoma									9	18							35	10,604.29				
Oregon	3,664	36,640	22	220					3	9	5	15					64	9,118.10				
South Dakota	171	1,710	20	200					182	364	28	56	114	228	1	2	148	16,759.34				
Utah	3	30	119	1,190	23	230			3	9	65	195					37	1,624.68				
Washington	1,628	16,280	38	380	2	20	1	3	3	9	76	228					248	13,068.50				
Wisconsin	79	790															39	1,205.85				
Wyoming	493	4,930	39	390	5	50			23	69	179	537	9	27			1	4,047.60				
Total	11,894	118,940	1,497	14,970	180	1,800	399	1,185	615	1,560	1,276	3,713	273	596	4	11	1,879	137,221.69	53	530	1	1

Sales of Indian lands during fiscal year ended June 30, 1908.

	Number of entries or partial payments.	Area.	Sales and interest.
		Acres.	
Alabama:			
Montgomery—Cherokee Indian school lands	11	652.12	$815.20
California:			
Eureka—			
Round Valley Indian Reservation lands	2	.....	578.25
Klamath River Indian Reservation	2	45.08	112.58
Oakland—Round Valley Indian Reservation	.....	.....	4,115.24
Colorado:			
Durango—			
Southern Ute, act February 20, 1895	117	12,765.97	9,852.66
Ceded Ute, act June 15, 1880, and July 28, 1882	24	2,830.84	1,109.95
Glenwood Springs—Ute Indian land	180	22,015.67	28,063.99
Montrose—Ute Indian lands	577	74,537.46	51,193.33
Idaho:			
Blackfoot—Shoshone and Bannock Indian lands	.....	.....	40.00
Kansas:			
Dodge City—Osage trust and diminished reserve land	65	5,647.28	6,459.57
Topeka—Kansas trust and diminished lands	1	.....	20.56
Minnesota:			
Cass Lake—Chippewa Indian lands	93	.....	16,028.24
Crookston—			
Chippewa Indian lands	231	.....	49,936.23
Red Lake Indian Reservation lands	112	.....	105,020.34
Duluth—Chippewa Indian lands	32	.....	4,603.27
Montana:			
Billings—Crow Indian ceded lands	36	.....	58,131.42
Nebraska:			
O'Neill—Omaha Indian land	3	200	4,930.59
North Dakota:			
Devils Lake—Sioux Indian lands	149	.....	58,089.90
Oklahoma:			
El Reno—Wichita ceded land	422	.....	80,865.20
Lawton—Kiowa, Comanche, and Apache Indian lands	51	.....	186,758.93
Oregon:			
La Grande—Umatilla Indian Reservation lands	109	8,554.16	7,164.32
South Dakota:			
Mitchell—Sioux Indian lands	393	.....	167,531.80
Pierre—Lower Brulé Indian Reservation	364	.....	20,810.23
Utah:			
Vernal—Uintah Valley Indian Reservation lands	154	883.05	25,066.87
Washington:			
Spokane—Colville Indian Reservation land	145	14,963.71	43,965.27
Waterville—Colville Indian Reservation land	100	8,345.73	21,531.17
Wyoming:			
Lander—Shoshone or Wind River Reservation	133	.....	44,177.41
Total	3,506	151,470.02	907,972.52

REPORT OF THE COMMISSIONER OF PENSIONS.

COMMISSIONERS OF PENSIONS SINCE 1833.

Name.	By whom appointed.	Whence appointed.	Date of commission.
Edwards, James L.	Jackson	Virginia	Mar. 3, 1833
Heath, James E.	Fillmore	do	Nov. 27, 1850
Waldo, Loren P.	Pierce	Connecticut	Mar. 17, 1853
Minot, Josiah	do	New Hampshire	Aug. 1, 1855
Whiting, George C.	do	Virginia	Jan. 19, 1857
Barrett, Joseph H.	Lincoln	Ohio	Apr. 15, 1861
Cox, Christopher C.	Johnson	Maryland	July 28, 1868
Van Aernam, Henry	Grant	New York	May 1, 1868
Baker, James H.	do	Minnesota	Apr. 20, 1871
Atkinson, Henry M.	do	Nebraska	Mar. 20, 1875
Gill, Charles R.	do	Wisconsin	Feb. 10, 1876
Bentley, John A.	do	do	Mar. 28, 1876
Dudley, William W.	Garfield	Indiana	June 27, 1881
Clarke, Otis P. G.	Arthur	Rhode Island	Nov. 15, 1884
Black, John C.	Cleveland	Illinois	Mar. 19, 1885
Tanner, James	Harrison	New York	Mar. 27, 1889
Raum, Green B.	do	Illinois	Oct. 19, 1889
Lochren, William	Cleveland	Minnesota	Apr. 13, 1893
Murphy, Dominic I.	do	Pennsylvania	May 28, 1896
Evans, Henry Clay	McKinley	Tennessee	Apr. 1, 1897
Ware, Eugene F.	Roosevelt	Kansas	May 10, 1902
Warner, Vespasian	do	Illinois	Mar. 4, 1905

REPORT OF THE COMMISSIONER OF PENSIONS.

DEPARTMENT OF THE INTERIOR,
BUREAU OF PENSIONS,
Washington, D. C., August 17, 1908.

SIR: I have the honor to submit herewith my annual report, consisting of statement and exhibits numbered from 1 to 10, inclusive, of the operations of the Bureau of Pensions for the fiscal year ended June 30, 1908.

GENERAL STATEMENT.

Exhibit 1 shows the number of pensioners of each class added to and dropped from the roll during the year. There were 967,371 pensioners on the roll at the close of the fiscal year 1907. The number of new pensioners added to the roll during the fiscal year 1908 was 38,682, and the number of pensioners dropped from the roll was 54,366. The number of pensioners on the roll at the close of the year was therefore 951,687, a net loss of 15,684.

The largest number of pensioners ever on the roll at any one time was on January 31, 1905, when the number was 1,004,196. The net decrease in the number of pensioners since that date is 52,509. The losses to the roll during the fiscal year 1908 were as follows:

Decrease in pension roll during fiscal year ended June 30, 1908.

By death	50,676
By remarriage	944
By minors arriving at the age of 16 years	1,025
By failure to claim for more than three years	711
For other causes	1,010
Total	54,366

The number of survivors of the civil war on the pension roll June 30, 1907, was 644,383. The number on the roll June 30, 1908, was 620,985, a decrease during the year of 23,353. The number dropped on account of death during the year was 34,333, and the number dropped for other causes was 864. The death rate of the survivors of the civil war during the year was slightly in excess of 5 per cent, and the number dropped on account of death was 3,132 greater than during the previous year. At the close of the year there were 7,099 original claims of survivors of the civil war pending in the Bureau. This number added to the number of survivors on the roll makes a total of 628,084 who either are pensioners or have claims pending.

The following table shows the number of pensioners on the roll in each class at the close of the fiscal years 1908 and 1907, with the gains and losses:

Pensioners on the roll June 30, 1908, and June 30, 1907.

	1908.	1907.	Gain.	Loss.
Revolutionary war:				
Daughters	2	3	.....	1
War of 1812:				
Widows	471	558	.....	87
Indian wars:				
Survivors	1,820	2,007	.....	187
Widows	3,018	3,201	.....	183
War with Mexico:				
Survivors	2,932	3,485	.....	553
Widows	6,914	7,214	.....	300
Civil war:				
General law—				
Invalids	142,044	178,816	.....	36,772
Widows	75,515	75,629	.....	114
Minor children	541	599	.....	58
Mothers	3,688	4,578	.....	890
Fathers	656	873	.....	217
Brothers, sisters, sons, and daughters	240	224	16	.....
Helpless children	528	489	39	.....
Act of June 27, 1890—				
Invalids	140,600	349,283	.....	208,683
Widows	.....	180,539	.....	180,539
Minor children	3,954	4,032	.....	78
Helpless children	295	292	3	.....
Act of February 6, 1907	338,341	116,239	222,102	.....
Act of April 19, 1908, widows	188,445	.....	188,445	.....
Army nurses	510	542	.....	32
War with Spain:				
Invalids	20,548	19,031	1,517	.....
Widows	1,145	1,100	45	.....
Minor children	331	316	15	.....
Mothers	3,096	3,090	6	.....
Fathers	536	527	9	.....
Brothers and sisters	7	11	.....	4
Helpless children	2	2	.....	.....
Regular establishment:				
Invalids	11,786	11,076	710	.....
Widows	2,580	2,526	54	.....
Minor children	120	122	.....	2
Mothers	871	821	50	.....
Fathers	139	133	6	.....
Brothers and sisters	5	5	.....	.....
Helpless children	7	8	.....	1
Total	951,687	967,371	413,017	428,701
Net loss	.....	.....	.....	15,684

All widows of soldiers and sailors who served in the civil war on the roll under the act of June 27, 1890, were transferred to the roll under the act of April 19, 1908, when it became law, and this accounts for the large number of civil war widows, shown by the table, on the roll under said act on June 30, 1908, and also accounts for the fact that there were no widows remaining on the roll on that date under the act of June 27, 1890.

During the year there was a loss of 36,772 pensioners in the invalid class, general law, civil war, and a loss of 208,683 in the invalid class, act of June 27, 1890. These losses were due largely to the transfer of pensioners in each of these classes to the act of February 6, 1907, at a higher rate, the net gain to that roll being 222,102.

The civil war pensioners are divided, according to the law under which the pension is granted, into the following classes:

(1) General law.
(2) Act of June 27, 1890, as amended by the act of May 9, 1900.
(3) Act of February 6, 1907.
(4) Act of April 19, 1908.

The annual value of the pension roll at the close of the fiscal year was $159,495,701 against $140,850,880 at the close of the previous year, a gain of $18,644,821 in one year. The annual value is the amount required to pay the pensioners on the roll at the close of the fiscal year for one entire year should there be no changes in the rates or in the number of pensioners during the year. The increase in the annual value of the roll is due to the large number of certificates issued during the year under the act of February 6, 1907, and the increase in the rates to widows granted by the act of April 19, 1908.

In the table below will be found the average annual value of the pension of each pensioner on the roll at the close of each of the last five years:

Average value of each pension for the last five years.

	1908.	1907.	1906.	1905.	1904
Average annual value of each pension	$167.59	$145.60	$138.18	$136.96	$134.84
Regular establishment	173.76	173.12	173.35	174.19	173.09
General law, civil war	215.30	204.20	191.43	187.51	180.58
Act of June 27, 1890	130.75	112.32	114.33	113.20	110.00
War with Spain	126.87	127.19	127.33	127.90	132.18
Act of February 6, 1907	167.70	170.09	.....	.....	.....
Act of April 19, 1908	145.10	.....	.....	.....	.....

Exhibit 2 shows the amount of first payments on each class of certificates made by pension agents to pensioners during the fiscal year 1908, and the amount of fees paid to attorneys. The total amount paid in first payments for the year 1908 is $13,394,633.41, being $6,750,864.72 in excess of that paid in first payments during the year 1907. The number of certificates upon which these first payments were made is 316,500, an average of $42.32 for each certificate.

The following table shows the first payments made each year during the last five years:

First payments made during the last five fiscal years.

Fiscal year.	Number.	Amount.	Average.
1908	316,500	$13,394,633	$42.32
1907	186,973	6,643,768	35.53
1906	111,803	6,152,182	55.02
1905	162,907	8,940,064	54.87
1904	128,623	10,306,375	80.82

At the close of the fiscal year there were 11,093 outstanding certificates upon which no first payments were made. The amount due on such certificates was $444,560.12. Those certificates did not reach the agencies in time to secure vouchers and make the payments therein before the close of the year.

Exhibit 3 shows the appropriations and disbursements for the fiscal year ended June 30, 1908, and the unexpended balances at the close of the year. The amounts appropriated and expended and the balances are as follows:

Receipts and disbursements for fiscal year ended June 30, 1908.

Appropriation for pensions (act March 4, 1907)	$145,000,000.00
Deficiency appropriation (act May 30, 1908)	10,000,000.00
Repayments to the appropriation	3,390.71
Total amount available for pensions	155,003,390.71
Amount disbursed	153,093,086.27
Balance covered into the Treasury	1,910,304.44
Appropriation for medical examinations	600,000.00
Amount expended and unpaid	247,533.25
Balance covered into the Treasury	352,466.75
Appropriation for salaries and clerk hire, pension agencies	507,000.00
Repayments to the appropriation	20.94
Amount available	507,020.94
Amount disbursed	501,795.74
Balance covered into the Treasury	5,225.20
Appropriation for rent and contingent expenses, pension agencies	84,500.00
Repayments to the appropriation	1.93
Amount available	34,501.93
Amount disbursed	32,169.63
Balance covered into the Treasury	2,332.30
Appropriation for examination of pension agencies	1,500.00
Amount disbursed	248.56
Balance covered into the Treasury	1,251.44
Appropriation for salaries, Pension Bureau	1,703,250.00
Amount disbursed	1,611,756.60
Balance covered into the Treasury	91,493.40
Appropriation for salaries, per diem, and expenses of special examiners	462,500.00
Amount disbursed	357,737.08
Balance covered into the Treasury	104,762.92

Summary of unexpended balances at the close of the fiscal year 1908, exclusive of unexpended appropriation for the payment of pensions, covered into the Treasury.

Salaries in Bureau	$91,493.40
Salaries, per diem, and expenses, special examiners	104,762.92
Fees, examining surgeons	352,466.75
Salaries and clerk hire, pension agencies	5,225.20
Rent and contingent expenses, pension agencies	2,332.30
Examination of pension agencies	1,251.44
Total	557,532.01

The amount expended for navy pensions during the fiscal year 1908 was $4,934,350.50. The law provides that the navy pensions shall be paid from the income of the navy pension fund so far as the same shall be sufficient for that purpose. The income from the navy pension fund for the year 1908 was $360,409.92, less than 8 per cent of the amount required for the payment of navy pensions. The amount derived from the interest on the navy pension fund has not been sufficient to pay the navy pensions since 1870. During the last five years, the interest on the navy pension fund and the amounts paid for navy pensions have been as follows:

Interest on navy pension fund and amounts paid for navy pensions.

Fiscal year.	Interest.	Navy pensions.	Fiscal year.	Interest.	Navy pensions.
1904	$287,374	$4,062,954	1907	$361,405	$4,248,712
1905	370,952	4,197,166	1908	360,409	4,934,350
1906	363,619	4,204,004			

Exhibit 4 shows the amount disbursed by each pension agency during the fiscal year. The amounts disbursed by the different agencies vary from $2,748,387.69 at the Concord agency to $17,621,652.81 at the Topeka agency. The total amount disbursed for pensions by the pension agencies is $152,959,537.96. In addition to this amount there was disbursed by the Treasury Department in payment of claims for reimbursement on account of expenditures incurred during the last sickness and burial of deceased pensioners who left no widows or minor children, the sum of $133,548.31, making the total amount expended for pensions, as shown by Exhibit 3, $153,093,086.27.

The amount expended for fees of examining surgeons, as shown by Exhibits 3 and 4, is $177,490.88. This does not cover the examinations made during the last quarter of the fiscal year. The unpaid accounts for fees of examining surgeons will make the total expenditure during the year amount to $247,533.25. This is a decrease in the amount paid for medical examinations as compared with the previous year of $243,040.34. This large decrease is due to the act

of February 6, 1907, granting pensions on account of age, no medical examinations being required in claims filed under that act.

It will be observed that the contingent expenses of the pension agency in this city are considerably larger than those of any other agency. One item of expense of this agency is in the payment of postage on checks mailed to foreign countries, this expenditure during the last fiscal year amounting to $625. A similar expense does not occur at any other agency.

The following table is a classification of the disbursements for pensions, showing the amounts disbursed to each class of pensioners of the various wars. The largest amount disbursed to any one class is that under the act of February 6, 1907, to survivors of the civil war, which is $45,645,639.19.

Classification of disbursements for pensions.

	Amount.	Total.	Grand total.
Regular Establishment.			
Army:			
Invalids	$1,584,629.96		
Widows and dependents	482,301.84		
		$2,066,931.80	
Navy:			
Invalids	432,223.42		
Widows and dependents	267,447.99		
		699,671.41	
			$2,766,603.21
Civil war.			
General law:			
Army—			
Invalids	36,217,074.54		
Nurses	76,552.07		
Widows and dependents	12,184,201.26		
		48,477,927.87	
Navy—			
Invalids	315,498.09		
Widows and dependents	179,039.25		
		494,537.34	
Act June 27, 1890:			
Army—			
Invalids	29,033,242.02		
Widows and dependents	15,427,705.92		
		44,460,947.94	
Navy—			
Invalids	928,245.61		
Widows and dependents	656,945.90		
		1,585,191.51	
Act February 6, 1907:			
Army	43,843,717.35		
Navy	1,801,921.84		
		45,645,639.19	
Act April 19, 1908:			
Army widows	3,604,021.02		
Navy widows	189,311.54		
		3,793,332.56	
			144,457,576.41
War with Spain.			
Army:			
Invalids	2,698,394.73		
Widows and dependents	797,024.38		
		3,495,419.11	
Navy:			
Invalids	106,454.93		
Widows and dependents	52,248.94		
		158,703.87	
			3,654,122.98
War of 1812.			
Widows			68,766.00
War with Mexico.			
Survivors	753,782.02		
Widows	725,363.51		
			1,479,145.53

Classification of disbursements for pensions—Continued.

	Amount.	Total.	Grand total.
Indian wars.			
Survivors	$205,289.63		
Widows	328,034.20		
			$533,323.83
Treasury settlements			133,548.31
Total disbursements			153,093,086.27

Exhibit 5 shows, by classes, the number of pensioners on the rolls of the different agencies June 30, 1908, and the number of pensioners on their rolls June 30, 1907. This statement shows the losses and gains of each agency during the fiscal year. The number of pensioners on the rolls of the different agencies varies from 15,633 at the Concord agency to 109,579 at the Topeka agency, the San Francisco agency being the only one showing an increase, all the other agencies showing a decrease in the number of pensioners at the close of the year.

Exhibit 6 gives the number of pensioners residing in each State and Territory of the United States, in the insular possessions, and in foreign countries who were on the roll June 30, 1908; it shows also the amounts paid for pensions during the fiscal year 1908 to residents of each State, Territory, insular possession, and foreign country. Below is a summary of this exhibit:

Residence.	Number.	Amount.
States and Territories	946,509	$152,126,644.12
Insular possessions	131	21,420.53
Foreign countries	5,047	811,473.31
Total	951,687	152,959,537.96

Exhibit 7 shows, by classes, the monthly rates of pension paid to pensioners and the number of pensioners at each rate on the roll June 30, 1908, under the different general acts of Congress, the total number being 937,080.

Exhibit 8 shows the same details in relation to the pensioners on the roll on that date by virtue of special acts of Congress, the total number being 14,607.

The amount disbursed for pensions by the United States from July 1, 1790, to June 30, 1865, was $96,445,444.23. The total cost of pensions and the expenses connected with the administration of the pension laws from the latter date to the present time, with the number of pensioners each year, are shown by the table on the following page.

Disbursements for pensions and for maintenance of pension system, 1866 to 1908.

Fiscal year.	Paid as pensions.	Cost, maintenance, and expenses.	Total.	Number of pensioners.
1866	$15,450,549.88	$407,165.00	$15,857,714.88	126,722
1867	20,784,789.69	490,977.35	21,275,767.04	155,474
1868	23,101,509.36	553,020.34	23,654,529.70	169,643
1869	28,513,247.27	564,526.81	29,077,774.08	187,963
1870	29,351,488.78	600,997.86	29,952,486.64	198,686
1871	28,518,792.62	863,079.00	29,381,871.62	207,495
1872	29,752,746.81	951,253.00	30,703,999.81	232,229
1873	26,982,063.89	1,003,200.64	27,985,264.53	238,411
1874	30,206,778.99	966,794.13	31,173,573.12	236,241
1875	29,270,404.76	982,695.35	30,253,100.11	234,821
1876	27,936,209.53	1,015,078.81	28,951,288.34	232,137
1877	28,182,821.72	1,034,459.33	29,217,281.05	232,104
1878	26,786,009.44	1,032,500.09	27,818,509.53	223,998
1879	33,664,428.92	837,734.14	34,502,163.06	242,755
1880	56,689,229.08	935,027.28	57,624,256.36	250,802
1881	50,583,405.35	1,072,059.64	51,655,464.99	268,830
1882	54,313,172.05	1,466,236.01	55,779,408.06	285,697
1883	60,427,573.81	2,591,648.29	63,019,222.10	303,658
1884	57,912,387.47	2,835,181.00	60,747,568.47	322,756
1885	65,171,937.12	3,392,576.34	68,564,513.46	345,125
1886	64,091,142.90	3,245,016.61	67,336,159.51	365,783
1887	73,752,997.08	3,753,400.91	77,506,397.99	406,007
1888	78,950,501.67	3,515,057.27	82,465,558.94	452,557
1889	88,842,720.58	3,466,968.40	92,309,688.98	489,725
1890	106,093,850.39	3,526,382.13	109,620,232.52	537,944
1891	117,312,690.50	4,700,636.44	122,013,326.94	676,160
1892	139,394,147.11	4,898,665.80	144,292,812.91	876,068
1893	156,906,637.94	4,867,734.42	161,774,372.36	966,012
1894	139,986,726.17	3,963,976.31	143,950,702.48	969,544
1895	139,812,294.30	4,338,020.21	144,150,314.51	970,524
1896	138,220,704.46	3,991,375.61	142,212,080.07	970,678
1897	139,949,717.35	3,987,783.07	143,937,500.42	976,014
1898	144,651,879.80	4,114,091.46	148,765,971.26	993,714
1899	138,355,052.95	4,147,517.73	142,502,570.68	991,519
1900	138,462,130.65	3,841,706.74	142,303,887.39	993,529
1901	138,531,483.84	3,868,795.44	142,400,279.28	997,735
1902	137,504,267.99	3,831,378.96	141,335,646.95	999,446
1903	137,759,653.71	3,993,216.79	141,752,870.50	996,545
1904	141,093,571.49	3,849,366.25	144,942,937.74	994,762
1905	141,142,861.33	3,721,832.82	144,864,694.15	996,441
1906	139,000,288.25	3,523,269.51	142,523,557.76	985,971
1907	138,155,412.46	3,309,110.44	141,464,522.90	967,371
1908	153,093,086.27	2,800,963.36	155,894,049.63	951,687
Total	3,654,663,365.73	112,852,477.09	3,767,515,842.82	.....

While the amount paid out for pensions, $153,093,086.27, during the fiscal year 1908 is the largest since the organization of the Bureau, with the exception of the amount paid out during the fiscal year 1893, the cost of its administration is the smallest since 1883, during which last-mentioned year there was paid out for pensions only $60,427,573.81.

The operating expense of the Bureau during the fiscal year 1893 was $4,867,734.42 and during the fiscal year 1908, $2,800,963.36, a decrease of $2,066,771.06.

Exhibit 9 is a statement of pension certificates issued during the fiscal year ended June 30, 1908. The following summary shows the number of issues by classes:

Pension certificates issued during fiscal year ended June 30, 1908, by classes.

Originals	37,691	Supplementals	463
Increases	35,355	Duplicates	2,764
Additionals	332	Accrueds	18,724
Reissues	231,280		
Restorations	159	Total	328,676
Renewals	1,908		

The different classes of pension certificates may be defined as follows:

Originals.—Cases in which no pension has before been granted.

Increases.—Claims for increased rate of pension.

Additional.—Issues under act of June 27, 1890, in lieu of pension under the general law.

Reissues.—Issues to allow for additional disabilities under the general law, to make corrections in former issues, and to allow pension under the general law and under the act of February 6, 1907, in lieu of pension under the act of 1890.

Restorations.—Issues to restore to the roll from date of last payment.

Renewals.—Issues to renew pension from a date when new title is shown.

Supplementals.—Cases in which title exists under different laws and issue is made under one law for a period not covered by the other issue.

Duplicates.—New certificates issued in lieu of former certificates lost or destroyed.

Accrueds.—Issues made for pension due in cases of deceased pensioners from date of last payment to date of death.

The total number of pension certificates of all kinds issued in the last ten years is as follows:

Pension certificates issued during last ten years.

1899	89,054	1904	153,938
1900	105,591	1905	185,242
1901	109,668	1906	136,905
1902	119,824	1907	236,516
1903	132,821	1908	328,676

More certificates were issued during the fiscal year than in any former year in the history of the Bureau. The number issued was 328,676, being 92,160 in excess of the number issued the preceding year (1907) and 16,130 in excess of the highest number issued in any previous year.

The records of the Bureau show that between February 6, 1907, and June 30, 1908, 431,113 claims were filed under the act of February 6, 1907, and Exhibit 10 of this report shows that there were only 16,926 of such claims pending June 30, 1908.

There will be a fewer number of allowances hereafter under that act, and it is believed that the number of certificates issued will materially decrease from year to year.

Exhibit 10 is a summary of the pending files of the Bureau based upon an actual count made at the close of the year. The table is arranged in such a way as to show not only the number of claims of

each class on file, but also the number of claims of each class based upon disabilities incurred or service rendered in each of the wars and in the regular establishment.

The total number of applications for pension of all kinds pending at the close of the year was 123,483, as against 356,181 pending at the beginning of the year. There are now only a little more than one-third as many claims pending as there were one year ago, and these are being adjudicated as rapidly as the evidence necessary to determine their merits is furnished, as the work of the Bureau is now practically current upon all classes of claims.

A recapitulation of the pending claims is as follows:

Claims pending at close of fiscal year ended June 30, 1908.

Civil war	77,675
War with Spain	19,280
Mexican war	306
Indian wars	287
Old wars	53
Regular establishment	4,729
Accrueds	21,153
Total	123,483

In addition to pension claims, as above noted, there were pending before the Bureau June 30, 1908, 44 applications for original military-bounty land warrants and 4 applications for duplicates of warrants theretofore issued and claimed to have been lost or destroyed.

PENSIONS OF THE SEVERAL WARS AND OF THE PEACE ESTABLISHMENT.

The amounts that have been paid in pensions to soldiers, sailors, and marines, their widows, minor children, and dependent relatives, on account of military and naval service since the foundation of the Government, are as follows:

Total paid for pensions since the foundation of the Government.

War of the Revolution (estimate)	$70,000,000.00
War of 1812 (service pension)	45,694,665.24
Indian wars (service pension)	9,355,711.03
War with Mexico (service pension)	40,876,879.10
Civil war	3,533,593,025.95
War with Spain and insurrection in the Philippine Islands	22,563,635.41
Regular Establishment	12,630,947.88
Unclassified	16,393,945.35
Total disbursements for pensions	3,751,108,809.96

PENSIONS ON ACCOUNT OF THE WAR WITH SPAIN AND THE INSURRECTION IN THE PHILIPPINE ISLANDS.

The amounts paid each year on account of disabilities incurred in or of deaths resulting from service in the war with Spain and in the insurrection in the Philippine Islands are as follows:

Total paid for pensions on account of the war with Spain and the insurrection in the Philippine Islands.

1899	$28,606.81	1905	$3,409,998.54
1900	332,905.25	1906	3,442,156.53
1901	1,175,225.76	1907	3,471,157.27
1902	1,738,446.28	1908	3,654,122.98
1903	2,204,084.21		
1904	3,106,931.78	Total	22,563,635.41

EXAMINING SURGEONS.

Most of the surgeons appointed to make examinations of applicants for pension or increase of pension are organized into boards of three members each, located at points in the United States most convenient to the applicants. In addition to the boards it is sometimes necessary to have single surgeons or specialists make examinations of claimants who can not go before a board or who require the attention of an expert. These surgeons are not under civil-service rules, and are paid for the work they actually do from a fund provided for that purpose by Congress. Examinations in foreign countries are made by surgeons designated by United States consuls. On June 30, 1908, there were 4,662 examining surgeons, and during the year 45,026 examinations were made, at an expense of $247,533.25.

The following table shows the location by States of the boards, single surgeons, and experts:

Surgeons employed on June 30, 1908.

States.	Boards.	Single surgeons.	Expert surgeons.	States.	Boards.	Single surgeons.	Expert surgeons.
Alabama	10	0	5	Nevada	2	1	0
Arizona	1	3	2	New Hampshire	12	0	2
Arkansas	23	1	9	New Jersey	9	0	3
California	21	2	20	New Mexico	4	1	3
Colorado	19	6	6	New York	61	0	31
Connecticut	10	0	4	North Carolina	12	5	6
Delaware	3	0	2	North Dakota	6	0	3
District of Columbia	3	0	7	Ohio	92	0	37
Florida	8	3	6	Oklahoma	29	1	11
Georgia	9	2	11	Oregon	14	5	9
Idaho	3	6	2	Pennsylvania	80	0	30
Illinois	91	0	29	Rhode Island	2	0	3
Indiana	88	0	30	South Carolina	4	0	3
Iowa	84	0	17	South Dakota	20	6	7
Kansas	73	5	18	Tennessee	41	2	18
Kentucky	74	1	11	Texas	12	5	18
Louisiana	5	1	4	Utah	2	1	3
Maine	25	0	13	Vermont	15	0	6
Maryland	11	0	4	Virginia	7	2	9
Massachusetts	22	0	12	Washington	16	5	6
Michigan	57	0	24	West Virginia	33	1	10
Minnesota	41	5	9	Wisconsin	49	2	17
Mississippi	7	1	5	Wyoming	2	4	1
Missouri	85	0	25				
Montana	7	2	5	Total	1,354	80	520
Nebraska	50	1	4				

SUMMARY.

Boards, 1,354 (three members each)	4,062
Single surgeons	80
Expert examining surgeons	520
Total	4,662

SPECIAL ACTS.

Since 1861 there have been granted by special acts of Congress 23,316 pensions and increase of pensions, of which 14,607 are now on the roll with an annual face value of $4,211,332. Only a little more than one-half of said amount is properly chargeable to special acts, as most of the beneficiaries had previously been pensioned under general laws at lower rates.

During the first session of the Sixtieth Congress 3,579 persons were included in the special acts passed, and pensions were granted at the rates specified in the following summary:

Pensions granted by special acts during the first session of the Sixtieth Congress.

Rates specified.	Number granted.	Rates specified.	Number granted.
$65	1	$15	8
$60	4	$12	343
$55	5	$10	2
$50	41	$8	41
$46	4	$6	1
$45	5	Rate not yet determined	4
$40	107	Inoperative:	
$38	97	$40	4
$35	5	$30	17
$30	1,183	$24	15
$27	1	$20	3
$25	17	$16	1
$24	1,313	$12	26
$20	137		
$17	23	Total	3,579
$16	171		

Of the above, 339 were granted to persons never before on the pension roll, and 3,240 to persons then receiving smaller pensions.

The annual value of said special acts is $1,066,764, and the increase in payments of pension due to such acts is $535,368.

ATTORNEYS.

The following statement shows the number of attorneys admitted to practice before the Bureau and the changes in the roll of recognized attorneys during the fiscal year 1908:

Attorneys recognized July 1, 1907, and July 1, 1908.

Attorneys on roll July 1, 1907	24,433
Attorneys gained by enrollment	743
Attorneys gained by restoration	11
Loss by death, etc	78
Loss by disbarment and suspension	59
Loss by relinquishment while under charges	11
Attorneys on roll July 1, 1908	25,039
Paid as attorneys' fees during year	$264,522.46
There was paid, as such fees, during 1907	$412,105.83

Attorneys' fees are paid by the pension agents upon the order of the Bureau out of first payments due pensioners after the allow-

ance of their claims, the amount of such fees being regulated by the pension laws. The average payment of fees to the entire bar for the year was less than $11 each.

The marked decrease in the amount of attorneys' fees paid is due to the fact that the act of February 6, 1907, prohibits the allowance of any compensation for services rendered in prosecuting any claim or in securing any pension under said act.

ORDER 78 AND ACT OF APRIL 24, 1906.

On March 15, 1904, an order was issued to take effect April 13, 1904, which provided that in the adjudication of pension claims under the act of June 27, 1890, as amended by the act of May 9, 1900, it should be taken and considered as an evidential fact, if the contrary did not appear, that when a claimant had passed the age of 62 years he would be disabled one-half in ability to perform manual labor and, if all other legal requirements were properly met, would be entitled to be rated at $6 per month; after 65 years, at $8 per month; after 68 years, at $10 per month, and after 70 years, at $12 per month.

The acts of April 24, 1906, and March 4, 1907, provided that the age of 62 years and over should be considered a permanent specific disability within the meaning of the pension laws.

During the fiscal year ended June 30, 1908, the number of claims allowed under order 78 was as follows:

Claims allowed under provisions of Order 78 during fiscal year ended June 30, 1908.

ORIGINALS.

At $6 per month	190
At $8 per month	81
At $10 per month	28
At $12 per month	51
Total	350

INCREASES.

From $6 to $8 per month	139
From $6 to $10 per month	20
From $6 to $12 per month	12
From $8 to $10 per month	203
From $8 to $12 per month	54
From $10 to $12 per month	204
Total	641

From April 13, 1904, the date the order took effect, until June 30, 1908, the number of allowances thereunder was as follows:

Originals	24,549
Increases	84,217
Total	108,766

These allowances are rated as follows:

Claims allowed under provisions of Order 78, from April 13, 1904, to June 30, 1908.

ORIGINALS.

At $6 per month	14,438
At $8 per month	5,398
At $10 per month	1,758
At $12 per month	2,955

INCREASES.

From $6 to $8	18,905
From $6 to $10	3,742
From $6 to $12	3,913
From $8 to $10	19,194
From $8 to $12	11,404
From $10 to $12	27,059
Grand total	108,766

Order 78 and the acts referred to are now substantially superseded by the act of February 6, 1907, and very few, if any, claims will hereafter be adjudicated thereunder.

There were but 7 original and 10 increase claims adjudicated under the order during the month of June, 1908.

ACT OF FEBRUARY 6, 1907.

The act of February 6, 1907, grants pensions to persons who served ninety days or more in the military or naval service of the United States during the civil war, or sixty days in the Mexican war, and were honorably discharged, at rates as follows: $12 per month when 62 years of age; $15 per month when 70 years of age, and $20 per month when 75 years of age.

From the date of its approval to June 30, 1908, 431,113 applications for pension or increase of pension were filed under this act, and more than one-half of these were filed within a few months after the act became law. A few of these applications, however, were duplicates of former ones filed by the same persons, and did not constitute separate claims.

The work of adjudicating these applications was immediately commenced, and by readjusting the clerical force of the Bureau from time to time to meet conditions as they arose, it was rapidly carried forward, and within a year from the time the act became law, all claims under it had been given attention, and the work of the Bureau was practically current.

The following is a statement of the number of certificates under that law issued each month since its passage:

Certificates issued under provisions of act of February 6, 1907.

1907.		1908.	
February	1,108	January	33,071
March	15,278	February	25,302
April	28,465	March	16,048
May	36,588	April	9,244
June	37,898	May	6,422
July	23,955	June	5,985
August	23,173	Total	377,192
September	15,415		
October	35,451		
November	33,742		
December	30,047		

Of the above only 11,223 were original allowances, or certificates issued to persons who were not already on the pension roll.

The following table shows the ages at the dates the claims were allowed of the survivors of the civil war and the war with Mexico who have been granted pensions under the act of February 6, 1907. The number of survivors in this table does not agree with the number of certificates issued, for the reason that increase issues were included under the certificates, while they were omitted in tabulating the number at the various ages. There was also a number of claims allowed on June 30, which were included in the table of ages, though not included in certificates issued, as the certificates could not be written until July 1.

Survivors of Mexican and civil wars, by ages.

Age.	Number of survivors.		Age.	Number of survivors	
	Civil war.	Mexican war.		Civil war.	Mexican war.
62	65,592	.....	83	1,424	221
63	32,822	.....	84	1,147	174
64	30,265	.....	85	829	118
65	25,460	.....	86	726	67
66	24,490	.....	87	403	51
67	18,572	.....	88	258	37
68	14,179	.....	89	119	19
69	8,143	.....	90	80	12
70	37,047	.....	91	47	7
71	15,941	3	92	40	4
72	14,016	1	93	21	2
73	11,947	4	94	16	2
74	7,234	17	95	4	.....
75	14,303	64	96	6	.....
76	8,393	128	97	5	.....
77	6,086	186	98	7	.....
78	4,959	261	103	1	.....
79	3,954	343	107	1	.....
80	3,719	413	108	1	.....
81	2,345	368			
82	2,035	363	Total	356,637	2,865

ACT OF APRIL 19, 1908.

The first section of the act of April 19, 1908, provides that from and after its passage "the rate of pension for widows, minor children under the age of sixteen years, and helpless minors as defined by existing laws, now on the roll or hereafter to be placed on the pension roll and entitled to receive a less rate than hereinafter provided shall be twelve dollars per month."

There were on the roll at the time of the approval of the act of April 19, 1908, entitled to the benefit of the first section of that act, 198,260 widows, 4,017 minors, and 300 helpless children; in all, 202,577, and in order to save them the trouble and expense of making application for the increase provided by that section, and in order to save the Bureau the labor of adjudicating each of such applications, immediately on the approval of said last-mentioned act, all pension agents were directed to increase the payments to such persons to $12 per month from April 19, 1908, on the certificates then held by them, and from the last-mentioned date such payments have been and will be so made.

The second section of the act grants pensions at the rate of $12 per month to the widows of persons who served ninety days or more in the Army or Navy of the United States during the civil war and were honorably discharged, without regard to their pecuniary condition, provided they were married prior to June 27, 1890. All pensions granted under the second section of the act commence on the date the applications are filed in the Bureau of Pensions.

The conditions of title under this section of the act are identical with those imposed upon widows by the act of June 27, 1890, as amended by the act of May 9, 1900, with the exception that the requirements as to dependence are eliminated. This act, therefore, supersedes the act of June 27, 1890, in so far as the claims of widows are concerned, and pensions are not now being granted to widows under the act of 1890 upon applications executed and filed on or after April 19, 1908.

The records show that 22,115 applications were filed under this law before the close of the fiscal year 1908, and up to that time 4,260 certificates were issued thereunder, as follows:

Certificates issued each month under act of April 19, 1908.

April, 1908	8
May, 1908	1,449
June, 1908	2,803
Total	4,260

TEN YEARS' SUMMARY.

The following table shows the operations of the Bureau in the adjudication of pension claims each year for the past ten years. "No benefit cases" are allowances under one law when the claimants are already in receipt of pension at an equal or higher rate under another law. As two pensions under different laws can not be paid to the same person covering the same period, the applicant, in a case of this kind, is permitted to elect which pension he will receive.

It should be stated that the number of applications filed during each year is not the exact number of separate or distinct claims filed. It is very frequently found, upon an examination of the papers, that a declaration is a duplicate of a former application filed by the same person, and hence it is not considered or adjudicated as a separate claim.

Summary of work for ten years ending June 30, 1908.

Year.	Cases on hand.	Office force.	Applications filed.	Admissions.	Rejections.	No benefit cases.	Total number of cases adjudicated.
1899	477,239	1,741	155,952	85,160	100,365	7,554	193,079
1900	437,104	1,741	181,005	102,596	116,129	8,000	226,725
1901	403,569	1,741	219,179	106,990	110,254	9,836	227,080
1902	339,436	1,741	188,626	117,268	118,464	10,441	246,173
1903	304,809	1,736	225,871	130,109	113,794	8,203	252,106
1904	285,523	1,734	254,333	151,211	108,114	8,725	268,050
1905	220,822	1,709	217,435	182,207	81,853	4,915	268,975
1906	182,453	1,684	201,322	138,809	82,938	4,943	226,690
1907	356,181	1,534	440,517	238,249	60,573	3,892	302,715
1908	123,483	1,464	185,622	325,140	59,449	3,403	387,992

BOUNTY-LAND WARRANTS.

During the fiscal year, 17 original military bounty-land warrants were issued, granting 2,640 acres of land, and duplicates of two 80-acre warrants lost or destroyed were also issued. Service to give title to bounty land must have been for at least fourteen days, or in a battle, prior to March 3, 1855; and if in the Navy or Regular Army must have been in some war in which the United States Government was engaged.

The following statement shows the total number of bounty-land warrants of all classes issued by this Bureau (including partial estimate of those issued for service in the Revolutionary war) and the number of acres granted up to June 30, 1908:

Bounty-land warrants issued to June 30, 1908.

Grade of warrants.	Number.	Acres.	Remarks.
War of the Revolution, acts prior to 1800.	16,663	2,666,080	Estimated average, 160 acres.
War of 1812, acts prior to 1850	29,471	4,891,520	1,101 320-acre warrants included
Total	46,134	7,557,600	
Mexican war, act of 1847:			
160 acres	80,689	12,910,240	This statement does not include 2,726 $100 Treasury certificates issued in lieu of 160-acre warrants and 460 $25 certificates in lieu of 40-acre warrants; in all, 454,560 acres.
40 acres	7,585	303,400	
Total	88,274	13,213,640	
1812, Mexican and Indian wars, act of 1850:			
160 acres	27,450	4,392,000	
80 acres	57,717	4,617,360	
40 acres	103,978	4,159,120	
Total	189,145	13,168,480	
Act of 1852:			
160 acres	1,223	195,680	Superseded by act of 1855
80 acres	1,699	135,920	
40 acres	9,070	362,800	
Total	11,992	694,400	
Act of 1855:			
160 acres	115,631	18,500,960	
120 acres	97,090	11,650,800	
100 acres	6	600	
80 acres	49,490	3,959,200	
60 acres	359	21,540	
40 acres	542	21,680	
10 acres	5	50	
Total	263,123	34,154,830	

SUMMARY.

War of the Revolution	16,663	2,666,080	Now obsolete.
War of 1812	29,471	4,891,520	Do.
Act of 1847	88,274	13,213,640	
Act of 1850	189,145	13,168,480	
Act of 1852	11,992	694,400	Superseded by act of 1855.
Act of 1855	263,123	34,154,830	
Total	598,668	68,788,950	

This Bureau has no record of the warrants issued directly from the General Land Office under special acts of Congress nor of those issued on account of the Virginia military land grants satisfied by the United States after the cession of the Northwestern Territory, and they are not included in the above table.

CRIMINAL PROSECUTIONS.

The number of new cases presented by the Bureau to the Department of Justice for prosecution on account of offenses against the pension laws and the number of indictments found show a marked and gratifying decrease over last year.

Of the 101 convictions secured, only 10 represented cases against persons who rendered military or naval service, again demonstrating the fact that the defenders of the Government are not inclined to become offenders against the pension laws.

The effort made by the Bureau to guard and maintain the integrity of the pension roll is shown by the following statement:

Prosecutions for offenses against the pension laws.

New cases presented for prosecution	148
Indictments found	113
Convictions secured	101
Sentences imposed	87
Acquittals	8
Cases dismissed	30
Civil suits instituted	2
Money recovered	$7,698

Of the cases brought to trial during the year (109), 92.7 per cent resulted in convictions and 173 cases were pending in the hands of United States attorneys on June 30, 1908.

The offenses for which convictions were obtained were as follows:

Offenses for which convictions were secured.

Accepting pension certificate as collateral	1
False affidavit	9
False claim	13
False declaration	13
False expense account	1
False jurat	15
False voucher	4
Forged affidavit	9
Illegal fee	8
Perjury	9
Personating soldier	6
Personating special examiner	13
Total	101

Two civil suits were disposed of during the fiscal year, leaving seven pending. The two cases disposed of resulted in judgments for the United States aggregating $5,688.75. Money recovered from all sources amounted to $7,698.

REVOLUTIONARY PENSIONERS.

But two pensioners remain on the roll on account of the Revolutionary war. They are Sarah C. Hurlbutt, aged 90 years, of Little Marsh, Pa., daughter of Elijah Weeks, who served in a Massachusetts company, and Phoebe M. Palmeter, aged 87 years, of West Edmeston, N. Y., daughter of Jonathan Wooley, who served in a New Hampshire company. Both are pensioned by special acts of Congress. The last surviving widow pensioner of that war was Esther S. Damon, of Plymouth Union, Vt., who died November 11, 1906, aged 92 years. The last survivor of the war of the Revolution was Daniel F. Bakeman, who died at Freedom, Cattaraugus County, N. Y., April 5, 1869, aged 109 years, 6 months, and 8 days.

WAR OF 1812.

The last surviving pensioned soldier of the war of 1812 was Hiram Cronk, of Ava, N. Y., who died May 13, 1905, aged 105 years and 16 days. The names of 471 widows of the war of 1812 remained on the pension roll June 30, 1908.

MISCELLANEOUS.

The mail received during the year, including applications for pensions, numbered 2,820,082 pieces, and the outgoing mail aggregated 1,563,520 pieces, making a total of 4,383,602 pieces handled, or an average of over 14,000 daily.

During the year 387,992 pension claims were adjudicated, of which 325,140 were admitted, 59,449 rejected, and 3,403 approved for allowance, but no certificates were issued, because they would be of no benefit to the applicants. Most of the claims rejected were applications for increase, in which, on medical examination, no increase of disability was shown. While the allowances exceeded by far those of former years, fewer claims were rejected than in any one year during the last ten years.

The act of December 21, 1893, requires the Bureau to give a notice of thirty days to pensioners before reducing their pensions or dropping their names from the roll. During the year 907 pensioners were dropped from the roll under this act for various causes, the pensions of 48 persons were reduced, and reissues were made in 197 cases to recover erroneous payments.

The act of March 3, 1899, provides for the dividing of pensions of resident pensioners of the United States who shall desert their wives or minor children, or who are inmates of National or State Soldiers' and Sailors' Homes. Since the passage of this act, 9,391 original claims have been filed thereunder, and 1,668 claims have been renewed, making a total of 11,059 claims. Of these 5,574 have been allowed and 5,222 rejected, leaving 263 pending on June 30, 1908.

During the year there were received in the Bureau 185,622 new applications for pension or increase of pension.

The number of cases for special examination on hand July 1, 1907, was 3,476, and the number referred for special examination during the year was 8,617, a total of 12,093. Of these 8,157 were disposed of during the year, leaving 3,936 on hand June 30, 1908. The average number of special examiners employed was 135, and the average number of cases disposed of per examiner was 60½. The disbursements for per diem and expenses of special examiners was $217,964.83, making the average cost of examination per case $13.28.

The appropriation act for the year provided for 125 special examiners, but this force was from time to time augmented by details from the clerical force of the Bureau, as authorized by law.

The work of card indexing the records of the Bureau, which was suspended for a time because of the large amount of work incident to the adjudication of claims under the act of February 6, 1907, has been resumed, and is now being rapidly carried forward by as large a force of clerks as can work to advantage upon the records. All the Regular Army records have been carded, and the Bureau is now at work upon those of the volunteers. A total of 376,476 cards have been written and placed in proper files for future use and reference.

When I became Commissioner of Pensions, March 4, 1905, the policy was adopted, and since continued, of allowing the force of the Bureau to gradually decrease in number by not filling any vacancies occurring therein, and thereby avoiding the necessity of discharging, at the end of any fiscal year, any worthy clerk in order to meet the reduction made in the appropriation for the expenses of the Bureau. The vacancies made by deaths, resignations, and dismissals for cause each year have been sufficient to keep the force of the Bureau within the appropriations, and all worthy employees have felt, and feel, that they were and are secure in their positions so long as they can creditably perform their duties, and instead of fearing discharge at the end of each year they have reasonable hope of promotion.

There were on the roll of the force of the Bureau on June 30, 1904, 1,734, and on June 30, 1908, 1,464 persons, a decrease of 270.

Notwithstanding the decrease in the force more work was accomplished and at less expense, proportionately, than during any other like period in the history of the Bureau.

From 1901 to 1904, inclusive, the number of certificates of pension issued was	516,251
From 1905 to 1908, inclusive, the number issued, not including 202,577 increases under the act of April 19, 1908, made by directions to pension agents, was	887,340
An increase of	371,089
From 1901 to 1904, inclusive, there was paid as pensions	$554,888,977.03
From 1905 to 1908, inclusive	571,391,648.31
An increase of	16,502,671.28
The operating expenses of the Bureau from 1901 to 1904, inclusive, were	15,542,757.44
From 1905 to 1908, inclusive	13,355,176.13
A decrease of	2,187,581.31

While the appropriations for the maintenance of the Bureau have been reduced each year since 1904, there have been saved and covered into the Treasury, as unexpended, of such appropriations since that year $1,343,665.72.

Very respectfully,

VESPASIAN WARNER,
Commissioner of Pensions.

The SECRETARY OF THE INTERIOR.

EXHIBIT 1.—*Pensioners added to and dropped from the roll during the year, and the annual value of the pension of each class on the roll June 30, 1908.*

Classes.	Pensioners on the roll at the beginning of the year.	Pensioners added to the roll.			Pensioners added to classes by transfer from other classes.					Total pensioners added to classes during the year.	Grand total.	Actual loss to the roll during the year.					Loss to one class by allowance under another class to same person.	Total loss to the roll.	Pensioners on the roll at the close of the year.	Annual value.
		Original.	Restoration.	Renewal.	Original.	Restoration.	Renewal.	Additional.	Reissue.			By death.	By remarriage.	Minors by legal limitation.	By failure to claim.	By other causes.				
Regular establishment.																				
Army:																				
Invalids	8,917	890	4	8	.....	.....	2	.....	5	909	9,826	317	.....	.....	16	20	63	416	9,410	$1,538,453
Widows, etc	2,385	205	.....	1	4	.....	.....	.....	.....	210	2,595	96	23	19	.....	.....	1	139	2,456	468,880
Navy:																				
Invalids	2,159	382	5	18	3	.....	2	.....	1	411	2,570	123	.....	.....	2	15	54	194	2,376	422,844
Widows, etc	1,230	104	.....	.....	.....	.....	.....	.....	.....	104	1,334	52	12	4	.....	.....	.....	68	1,266	265,572
Civil war.																				
Act of Feb. 6, 1907:																				
Army	110,210	8,714	2	185	15	.....	5	.....	221,030	229,951	340,161	13,097	.....	.....	.....	13	367	13,477	325,895	54,715,596
Navy	6,029	723	1	5	4	.....	.....	.....	6,298	7,031	13,060	562	.....	.....	.....	27	4	593	12,446	2,025,264
General law:																				
Army—																				
Invalids	177,278	13	22	39	1	11	900	.....	36	1,022	178,300	8,038	.....	.....	41	.....	34,921	43,000	140,703	35,207,328
Nurses	542	6	.....	.....	.....	.....	.....	.....	.....	6	548	37	.....	.....	.....	.....	1	38	510	75,660
Widows, etc	81,296	2,245	22	528	6	.....	45	.....	59	2,905	84,201	5,007	206	166	91	20	11	5,501	80,054	12,321,540
Navy—																				
Invalids	1,538	1	.....	.....	.....	.....	4	.....	.....	5	1,543	103	.....	.....	1	1	277	382	1,341	340,692
Widows, etc	1,099	13	1	.....	.....	.....	1	.....	2	17	1,116	71	.....	3	.....	.....	.....	74	1,116	190,536
Act of June 27, 1890:																				
Army—																				
Invalids	337,703	1,836	29	35	1	1	21	289	.....	2,212	339,915	11,898	.....	.....	216	651	186,931	199,696	135,605	17,540,082
Minors, etc	4,198	731	.....	.....	.....	.....	.....	.....	.....	731	4,929	26	.....	786	.....	.....	.....	812	4,117	745,980
Navy—																				
Invalids	11,580	235	3	1	.....	.....	1	11	.....	251	11,831	635	.....	.....	16	15	6,011	6,677	4,995	629,215
Minors, etc	126	27	.....	.....	.....	.....	.....	.....	.....	27	153	.....	.....	21	.....	.....	.....	21	132	24,552
Act of June 27, 1890, and act of April 19, 1908:																				
Army widows	172,838	18,042	25	47	3	.....	.....	.....	1	18,118	190,956	8,126	601	.....	265	95	113	9,200	180,402	26,174,064
Navy widows	7,701	765	1	3	.....	.....	.....	.....	.....	769	8,470	310	28	.....	9	4	2	353	8,043	1,170,192

War with Spain.																			
Army:																			
Invalids	18,393	1,839	30	46					1,915	20,308	291			23	135	2	451	19,857	2,342,361
Widows, etc	4,775	291		3	1				295	5,070	134	47	26	12	8	3	230	4,840	764,020
Navy:																			
Invalids	638	54	1	2	2				59	697	1			1	4		6	691	99,162
Widows, etc	271	16		1					17	288	10	1					11	277	50,688
War of 1812.																			
Widows	558	1							1	559	86			2			88	471	70,356
War with Mexico.																			
Survivors	3,485	6	1	1	2		1		11	3,496	562			1		1	564	2,932	691,932
Widows	7,214	297			1				298	7,512	577	9		9	1	2	598	6,914	998,508
Indian wars.																			
Survivors	2,007	43		2	1				46	2,053	221			4	1	7	233	1,820	187,332
Widows	3,201	130		1	1				132	3,333	296	17		2			315	3,018	434,832
Total	967,371	37,609	147	926	45	12	982	300	227,432	267,453	1,234,824	50,676	944	1,025	711	1,010	228,771	283,137	951,687	159,495,701

NOTE.—Thirty-seven Navy concurrent originals issued under the act of March 2, 1867, and 32 additionals payable to widows, are not included.

All civil war issues under special act are now included in the general-law class: 789 Army and 21 Navy, act of February 6, 1907; 4,614 Army and 159 Navy invalid, act of June 27, 1890; and 1,354 Army and 74 Navy widows, act of April 19, 1908, are transferred to the respective general-law classes in the report.

EXHIBIT 2.—*Number and amount of first payments in original, increase, reissue, restoration, and other cases made during the fiscal year ended June 30, 1908.*

Class.	Original.		Increase and reissue.		Supplemental.		Additional.		Restoration and renewal.		Total.	
	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.	Number.	Amount.
Regular Establishment:												
Army—Invalids	839	$106,933.84	513	$17,503.91	1	$55.84			11	$6,929.07	1,364	$131,422.66
Army—Widows, etc.	197	41,077.97	17	393.09	1	30.27			1	6.88	216	41,508.21
Navy—Invalids	385	34,896.97	151	7,028.71					16	521.01	552	42,446.69
Navy—Widows, etc.	103	12,661.00	4	12.10								12,673.10
Civil war; act February 6, 1907:												
Army	8,567	416,042.00	252,375	8,945,134.38	141	1,000.84			295	13,183.84	261,378	9,375,361.06
Navy	721	32,581.82	8,063	228,644.61					11	817.20	8,795	262,043.63
Civil war; general law:												
Army—Invalids	17	7,048.73	9,974	359,290.90	34	15,936.37			915	50,203.46	10,940	432,479.46
Army—Nurses	4	482.80	1	45.07							5	527.87
Army—Widows, etc.	2,212	298,123.08	209	21,270.46	5	264.60			531	65,307.01	2,957	384,965.15
Navy—Invalids	1	280.00	62	4,390.78							63	4,650.78
Navy—Widows, etc.	17	1,047.60	13	820.32					1	45.23	31	1,913.15
Civil war; act June 27, 1890:												
Army—Invalids	1,906	270,093.57	4,814	114,245.80	110	25,452.78	389	$15,475.69	120	23,861.80	7,339	449,129.64
Army—Widows, etc.	13,174	1,199,912.00	276	8,360.73	6	117.86			36	10,499.66	13,492	1,218,890.25
Navy—Invalids	185	31,530.25	316	9,237.06	17	6,965.46	12	530.93	2	93.40	532	48,357.10
Navy—Widows, etc.	490	49,036.84	27	1,023.93					2	91.73	519	50,152.50
Civil war; act April 19, 1908:												
Army—Widows	2,541	177,685.21							8	1,869.54	2,549	179,554.75
Navy—do	187	12,482.00							1	38.00	188	12,520.00
War with Spain:												
Army—Invalids	1,774	451,097.04	1,122	35,038.09					76	10,493.21	2,972	496,628.34
Army—Widows, etc.	271	66,485.70	22	163.40					2	94.40	295	66,743.50
Navy—Invalids	50	13,479.46	42	1,392.29					3	515.60	95	15,387.35
Navy—Widows, etc.	18	4,569.87	2	10.67					1	104.80	21	4,685.34
War of 1812—Widows			3	139.60							3	139.60
War with Mexico—Survivors	7	8,856.27	1,304	50,715.56	4	1,645.07			4	813.87	1,319	62,030.77
War with Mexico—Widows	292	43,424.26	262	2,625.55							554	46,049.81
Indian wars—Survivors	47	21,854.45	17	612.02					1	24.00	65	22,490.47
Indian wars—Widows	139	31,615.67	10	266.56							149	31,882.23
Total	34,144	3,333,278.40	279,599	9,808,365.59	319	51,469.09	401	16,006.62	2,037	185,513.71	316,500	13,394,633.41

Full amount of fees paid to attorneys	$264,522.46	Average value of first payments in original general-law cases	$136.36
At the close of the year there remained unpaid 11,093 cases of all classes, on which the first payments due amounted to	444,560.12	Average value of first payments in original act June 27, 1890, cases	98.42
		Average value of first payments in original act of April 19, 1908, cases	69.67
Average value of first payments in original cases	97.62	Average value of first payments in original war with Spain cases	253.49
Average value of first payments in original regular-establishment cases	128.32	Average value of first payments in increase and reissue cases	35.08
Average value of first payments in original act February 6, 1907, cases	48.40	Average value of first payments in all cases	42.00

EXHIBIT 3.—*Appropriations for pensions and disbursements on account thereof for fiscal year ended June 30, 1908, and unexpended balances at close of year.*

Items of appropriation.	Appropriations.				Disbursements.			Balances.		
	Amount appropriated, act March 4, 1907.	Deficiency appropriation act May 30, 1908.	Repayments to the appropriation.	Total.	Amount disbursed by United States pension agents	Amount disbursed by Treasury settlements.	Total amount disbursed.	Balance remaining in hands of United States pension agents June 30, 1908.	Balance remaining in United States Treasury June 30, 1908.	Available balance June 30, 1908.
Army pensions	$140,200,000.00	$9,750,000.00	$2,883.14	$149,952,883.14	$148,030,200.45	$128,535.32	$148,158,735.77	$1,034,647.19	$759,500.18	$1,794,147.37
Navy pensions	4,800,000.00	250,000.00	507.57	5,050,507.57	4,929,337.51	5,012.99	4,934,350.50	80,730.28	35,426.79	116,157.07
Total	145,000,000.00	10,000,000.00	3,390.71	155,003,390.71	152,959,537.96	133,548.31	153,093,086.27	1,115,377.47	794,926.97	1,910,304.44
Fees of examining surgeons, pensions	600,000.00			600,000.00	177,490.88		177,490.88	147,509.12	275,000.00	422,509.12
Salaries and expenses of pension agents:										
Salaries, pension agents	72,000.00			72,000.00	71,666.66	322.22	71,988.88		11.12	11.12
Clerk hire, pension agencies	435,000.00		20.94	435,020.94	429,806.86		429,806.86	5,209.41	4.67	5,214.08
Rent, for pension agency at New York, N. Y.	4,500.00			4,500.00	4,500.00		4,500.00			
Examinations, pension agencies	1,500.00			1,500.00		248.56	248.56		1,251.44	1,251.44
Contingent expenses, pension agencies	30,000.00		1.93	30,001.93	9,327.37	18,342.26	27,669.63	1,652.00	680.30	2,332.30
Total	543,000.00		22.87	543,022.87	515,300.89	18,913.04	534,213.93	6,861.41	1,947.53	8,808.94
Grand total	146,143,000.00	10,000,000.00	3,413.58	156,146,413.58	153,652,329.73	152,461.35	153,804,791.08	1,269,748.00	1,071,874.50	2,341,622.50

In addition to the above there were disbursed during the fiscal year ended June 30, 1908, the following sums chargeable to the appropriation for the fiscal year ended June 30, 1907:

Fees of examining surgeons, pensions, by pension agent at Washington, D. C.	$67,719.08
Fees of examining surgeons, pensions, by Treasury settlements	1,518.66
Total	69,237.74

Of the amount $4,934,350.50 disbursed for navy pensions, $360,409.92 was paid from the navy pension fund under act March 4, 1907.

EXHIBIT 4.—*Amount disbursed at United States pension agencies during fiscal year ended June 30, 1908, as shown by accounts current.*

Agency.	Pensions.			Fees of examining surgeons, pensions.	Salaries.	Clerk hire.	Rent.	Contingent expenses.	Grand total.
	Army.	Navy.	Total.						
Augusta	$2,932,734.97		$2,932,734.97		$4,000.00	$9,000.00		$121.08	$2,945,856.05
Boston	7,957,908.02	$1,058,253.82	9,016,161.84		4,000.00	25,666.66		583.71	9,046,412.21
Buffalo	6,787,290.83		6,787,290.83		4,000.00	21,000.00		350.52	6,812,641.35
Chicago	10,855,847.42	961,700.31	11,817,547.73		4,000.00	32,446.33		793.63	11,854,787.69
Columbus	15,896,295.57		15,896,295.57		4,000.00	39,215.78		748.44	15,940,259.79
Concord	2,736,073.98		2,736,073.98		3,666.66	8,432.00		215.05	2,748,387.69
Des Moines	8,520,310.10		8,520,310.10		4,000.00	23,956.23		279.85	8,548,546.18
Detroit	6,893,613.84		6,893,613.84		4,000.00	19,291.66		523.29	6,917,428.79
Indianapolis	10,594,857.69		10,594,857.69		4,000.00	26,369.38		775.41	10,626,002.48
Knoxville	9,396,104.45		9,396,104.45		4,000.00	28,054.54		400.61	9,428,559.60
Louisville	4,128,016.86		4,128,016.86		4,000.00	13,122.06		221.20	4,145,360.12
Milwaukee	7,884,339.69		7,884,339.69		4,000.00	22,101.13		391.89	7,910,832.71
New York	7,096,926.74	938,010.35	8,034,937.09		4,000.00	24,845.31	$4,500.00	471.38	8,068,753.78
Philadelphia	7,961,009.46	610,788.26	8,571,797.72		4,000.00	25,991.00		544.75	8,602,333.47
Pittsburg	6,851,255.36		6,851,255.36		4,000.00	20,934.66		330.84	6,876,520.86
San Francisco	6,428,501.73	313,498.38	6,742,000.11		4,000.00	20,622.17		643.48	6,767,265.76
Topeka	17,575,075.14		17,575,075.14		4,000.00	41,923.00		654.67	17,621,652.81
Washington	7,534,038.60	1,047,086.39	8,581,124.99	$177,490.88	4,000.00	26,834.95		1,277.57	8,790,728.39
Total	148,030,200.45	4,929,337.51	152,959,537.96	177,490.88	71,666.66	429,806.86	4,500.00	9,327.37	153,652,329.73

EXHIBIT 5.—*Classified statement showing number of pensioners on rolls at each agency June 30, 1908, and number on rolls June 30, 1907.*

Agency.	Regular establishment.				Civil war.							
					General law.					Act June 27, 1890.		
	Army.		Navy.		Army.			Navy.				
	Invalids.	Widows, etc.	Invalids.	Widows, etc.	Invalids.	Nurses.	Widows, etc.	Invalids.	Widows, etc.	Army. Invalids.	Navy. Invalids.	Army. Minors, etc.	Navy. Minors, etc.
Topeka	923	145	.....	.....	15,401	52	6,650	.....	.....	19,761	.....	669	.....
Columbus	564	120	.....	.....	19,350	35	10,190	.....	.....	14,274	.....	321	.....
Chicago	446	87	445	132	10,843	47	6,339	475	271	10,187	1,277	324	27
Knoxville	887	264	.....	.....	5,177	27	3,112	.....	.....	12,072	.....	605	.....
Indianapolis	527	70	.....	.....	18,432	31	7,909	.....	.....	6,840	.....	263	.....
Boston	318	152	274	173	3,981	32	5,111	335	359	4,492	817	139	26
Philadelphia	347	147	264	179	4,756	25	3,998	126	134	6,834	462	189	17
New York	579	287	445	246	3,631	25	3,788	157	172	4,623	800	123	23
Washington	2,022	503	694	490	5,242	65	3,340	191	155	7,963	1,266	261	32
Des Moines	325	47	.....	.....	9,086	42	4,133	.....	.....	7,970	.....	168	.....
Milwaukee	340	81	.....	.....	7,731	25	4,180	.....	.....	6,559	.....	196	.....
Pittsburg	160	51	.....	.....	5,477	14	3,219	.....	.....	7,110	.....	125	.....
Buffalo	283	97	.....	.....	7,425	17	5,108	.....	.....	6,404	.....	100	.....
San Francisco	849	171	254	46	3,781	46	1,654	57	25	6,681	373	160	7
Detroit	306	71	.....	.....	8,943	13	4,276	.....	.....	5,953	.....	126	.....
Louisville	375	105	.....	.....	3,810	9	2,541	.....	.....	4,322	.....	257	.....
Augusta	83	38	.....	.....	3,868	3	2,186	.....	.....	1,933	.....	48	.....
Concord	76	20	.....	.....	3,769	2	2,320	.....	.....	1,627	.....	43	.....
Total	9,410	2,456	2,376	1,266	140,703	510	80,054	1,341	1,116	135,605	4,995	4,117	132

EXHIBIT 5.—*Classified statement showing number of pensioners on rolls of each agency June 30, 1908, and number on rolls June 30, 1907*—Continued.

Agency.	Civil war				War with Spain.				War of 1812.	War with Mexico.		Indian wars.		Number of pensioners June 30, 1908.	Number of pensioners June 30, 1907.
	Act April 19, 1908.		Act February 6, 1907.		Army.		Navy.								
	Army. Widows.	Navy. Widows.	Army.	Navy.	Invalids.	Widows, etc.	Invalids.	Widows, etc.	Widows.	Survivors.	Widows.	Survivors.	Widows.		
Topeka	20,928	.....	41,288	.....	1,784	297	.....	.....	24	416	935	122	184	109,579	111,508
Columbus	17,125	.....	29,153	.....	2,061	348	.....	.....	40	115	255	7	11	93,969	95,829
Chicago	12,266	1,242	24,599	2,299	1,226	269	135	32	26	202	484	11	96	73,787	75,099
Knoxville	12,031	.....	20,387	.....	2,076	651	.....	.....	129	810	2,279	588	1,935	63,030	63,890
Indianapolis	8,923	.....	14,090	.....	1,751	172	.....	.....	18	136	325	3	14	59,504	60,906
Boston	13,298	1,982	22,790	2,911	637	387	89	38	13	24	98	6	17	58,499	59,236
Philadelphia	14,872	1,251	20,746	1,622	725	266	72	30	12	50	164	2	12	57,302	58,295
New York	13,537	1,908	18,709	2,647	791	420	132	50	22	73	191	5	14	53,398	53,888
Washington	9,211	1,390	15,273	2,110	1,423	527	166	107	72	168	451	29	46	53,197	53,640
Des Moines	8,361	.....	20,597	.....	929	151	.....	.....	7	126	222	13	30	52,207	53,000
Milwaukee	8,196	.....	19,447	.....	1,057	220	.....	.....	10	61	112	5	21	48,241	48,843
Pittsburg	10,544	.....	15,974	.....	654	143	.....	.....	8	25	95	1	2	43,602	44,496
Buffalo	8,154	.....	14,950	.....	669	203	.....	.....	36	25	56	2	7	43,536	45,069
San Francisco	6,121	270	17,332	857	1,472	230	97	20	7	500	743	1,021	604	43,378	42,713
Detroit	6,444	.....	12,283	.....	1,198	219	.....	.....	7	39	77	2	7	39,964	40,685
Louisville	5,375	.....	7,670	.....	900	233	.....	.....	16	143	370	3	14	26,143	26,854
Augusta	2,415	.....	5,821	.....	223	43	.....	.....	12	11	31	.....	3	16,718	17,303
Concord	2,601	.....	4,786	.....	281	61	.....	.....	12	8	26	.....	1	15,633	16,117
Total	180,402	8,043	325,895	12,446	19,857	4,840	691	277	471	2,932	6,914	1,820	3,018	951,687	967,371

EXHIBIT 6.—*Pensioners in each State and Territory, each insular possession, and each foreign country on the roll June 30, 1908, and amounts paid for pensions during fiscal year 1908.*

State or country.	Number.	Amount.
UNITED STATES.		
Alabama	3,788	$541,123.51
Alaska	86	12,427.38
Arizona	871	128,839.74
Arkansas	10,724	1,597,635.79
California	27,207	4,279,199.90
Colorado	9,098	1,360,830.76
Connecticut	11,826	1,848,403.88
Delaware	2,705	435,652.39
District of Columbia	8,683	1,409,497.13
Florida	3,870	589,867.65
Georgia	3,524	517,367.86
Idaho	2,223	343,035.94
Illinois	66,680	10,597,891.92
Indiana	58,016	10,291,109.59
Iowa	33,362	5,748,809.05
Kansas	37,547	6,502,226.72
Kentucky	25,657	4,072,137.35
Louisiana	6,447	902,359.51
Maine	17,620	3,066,015.49
Maryland	12,668	2,041,649.22
Massachusetts	40,044	6,166,127.63
Michigan	40,335	7,003,969.16
Minnesota	15,789	2,483,175.49
Mississippi	4,738	691,581.54
Missouri	48,615	8,169,900.15
Montana	2,114	322,975.25
Nebraska	15,405	2,322,826.24
Nevada	505	75,027.69
New Hampshire	7,868	1,316,580.93
New Jersey	24,420	3,424,077.35
New Mexico	2,250	352,248.06
New York	81,167	12,935,146.97
North Carolina	4,091	598,807.21
North Dakota	2,108	327,858.07
Ohio	93,941	15,961,294.01
Oklahoma	13,545	1,548,140.11
Oregon	7,862	1,198,604.73
Pennsylvania	93,388	14,120,179.94
Rhode Island	5,369	809,890.80
South Carolina	2,021	271,649.45
South Dakota	4,548	712,865.62
Tennessee	18,755	2,943,464.16
Texas	8,895	1,255,830.09
Utah	1,074	170,770.47
Vermont	7,815	1,422,551.79
Virginia	8,807	1,426,472.25
Washington	10,761	1,651,313.86
West Virginia	12,136	1,938,725.19
Wisconsin	24,595	4,070,114.87
Wyoming	946	148,394.26
Total	946,509	152,126,644.12
INSULAR POSSESSIONS.		
Hawaii	64	10,835.64
Philippines	37	6,460.72
Porto Rico	30	4,118.17
Total	131	21,420.53
FOREIGN COUNTRIES.		
Algeria	1	126.00
Argentine Republic	9	1,056.00
Australia	74	$12,936.33
Austria-Hungary	34	5,484.87
Azores	4	517.50
Bahamas	3	456.00
Belgium	18	2,903.70
Bermuda	5	480.00
Bolivia	1	230.67
Brazil	4	303.47
Canada	2,651	427,743.99
Cape Verde Islands	1	96.00
Chile	9	1,686.00
China	17	2,742.27
Comoro Islands	1	120.00
Costa Rica	4	579.87
Cuba	55	8,872.07
Danish West Indies	3	684.13
Denmark	34	5,484.57
Dominican Republic	1	144.00
Dutch West Indies	2	324.00
England	370	57,683.10
Egypt	1	204.00
France	59	9,516.85
Germany	581	92,820.13
Greece	9	1,458.32
Guatemala	3	350.80
Haiti	1	87.60
Honduras	2	334.20
Hongkong	2	192.00
India	5	664.40
Ireland	461	74,417.91
Isle of Man	2	331.47
Isle of Pines	4	805.30
Italy	41	6,615.12
Jamaica	5	1,050.53
Japan	20	3,224.67
Korea	1	180.00
Liberia	10	1,615.27
Madeira	4	888.00
Malta	2	288.00
Mexico	158	25,505.98
Netherlands	8	1,218.00
Newfoundland	2	236.40
New Zealand	11	1,706.23
Nicaragua	3	294.00
Norway	58	9,353.87
Panama	17	1,371.87
Paraguay	1	440.27
Peru	8	851.14
Portugal	1	140.20
Russia	15	2,520.67
Scotland	92	14,840.53
Seychelles Islands	1	180.00
South Africa	4	727.30
Spain	1	143.27
St. Helena	1	216.00
St. Martin	1	165.60
Sweden	57	9,994.67
Switzerland	60	9,670.60
Turkey	12	1,654.13
Uruguay	3	480.00
Wales	19	3,063.47
Total	5,047	811,473.31

SUMMARY

	Pensioners.	Payments.
Pensioners residing in States and Territories and payments to them	946,509	$152,126,644.12
Pensioners residing in insular possessions and payments to them	131	21,420.53
Pensioners residing in foreign countries and payments to them	5,047	811,473.31
Total	951,687	152,959,537.96
Payments by Treasury Department (Treasury settlements)		133,548.31
Total payments on account of army and navy pensions for the fiscal year		153,093,086.27

EXHIBIT 7.—*Statement showing, by classes, the different monthly rates paid to pensioners and number at each rate on roll June 30, 1908.*

Rate.	Regular establishment.		Civil war.							War with Spain		War of 1812.	War with Mexico.		Indian wars.	
			General law.			Act June 27, 1890.		Act April 19, 1908.	Act Feb. 6, 1907.							
	Invalids.	Widows, etc.	Invalids.	Nurses.	Widows, etc.	Invalids.	Minors, etc.	Widows.		Invalids.	Widows, etc.	Widows.	Survivors.	Widows.	Survivors.	Widows.
$1.50	2															
2.00	4															
3.00	3															
4.00	3															
5.00	5															
6.00	3,225		3,027			11,331				9,600						
6.25										4						
7.00			6													
7.50	14		20			1				35						
8.00	1,730		2,693		7	19,954	7			3,657					1,666	
8.50	1		23							34						
8.62½			2													
9.00			12													
9.50	2		2													
9.75	1															
10.00	1,140		2,374			12,800				2,107						
10.20			1													
10.25			5													
10.50	3															
11.00	3		10													
11.25			43							22						
11.33½			1													
11.50	3		3													
11.75			3													
12.00	1,450	2,694	19,240	390	71,517	96,494	4,242	188,445	203,709	1,808	4,722	446	119	6,591		2,905
12.25			8													
12.50	8		19							8						
12.68	1															
12.75	2		84							44						
13.00	4		94													
13.25			6													
13.33½			1													
13.37½			1													
13.50	1		8						1	1						
13.68	1															
13.75	1		8													
14.00	535		14,103						2	548						
14.25			5													
14.50	1															
14.75			2													
15.00	36	46	1,086		1,393	1			81,831	78	39		15			
15.18	1															
15.25			2													
15.50	1		4							1						
15.54	1															
15.68	1															
15.75			1							1						
15.86	1															
16.00	143		3,998							35						
16.25			3													
16.50	4		11													
16.68	2															
16.75			3													
17.00	1,202	112	32,078		2,160				1	1,097	63					
17.25	1		1													
17.50	10		6													
17.75			2													
17.86	1															
18.00	19		333						2	1						
18.18	1															
18.25	1															
18.50	2		6													
18.75			32						1	8						
19.00	3		4							1						
19.18	2															
19.25	1		2													
19.50	1															
19.68	1															
19.75						1										
20.00	60	180	2,770		2,048	2			52,755	83	71		2,419			

EXHIBIT 7.—*Statement showing, by classes, the different monthly rates paid to pensioners and the number at each rate on roll June 30, 1908*—Continued.

Rate.	Regular establishment.		Civil war.							War with Spain.		War of 1812.	War with Mexico.		Indian wars.	
			General law.			Act June 27, 1890.		Act April 19, 1908.	Act Feb. 6, 1907.							
	Invalids.	Widows, etc.	Invalids.	Nurses.	Widows, etc.	Invalids.	Minors, etc.	Widows.		Invalids.	Widows, etc.	Widows.	Survivors.	Widows.	Survivors.	Widows.
$20.36	1															
20.50	7		2													
20.68	3															
21.00	4		2						1							
21.25	7		3							1						
21.36	2															
21.50	2		1			1			1							
21.86	1															
22.00	50		1,797			1				33						
22.50	5		31			1			2	2						
22.68	1															
23.00	4								3							
23.18	2															
23.25			2													
23.50	2															
23.86	2															
24.00	734		25,428			5				410						
24.18	1															
24.25									1							
24.36	1															
24.50			2						1							
25.00	72	129	1,605		481				3	29	37		1			

Rate.	Regular establishment.		Civil war.					War with Spain.	
			General law.		Act June 27, 1890.		Act Feb. 6, 1907.		
	Invalids.	Widows, etc.	Invalids.	Widows, etc.	Invalids.	Minors, etc.		Invalids.	Widows, etc.
$25.25			1						
25.50							1		
25.75	1								
26.00	2						1	1	
26.36	3								
26.50	1								
26.68	1								
26.75	1		1						
27.00	30		779		2		2	13	
27.18	2								
27.36	1								
27.50	5		2				1		
27.68								1	
27.86	1								
28.00	1								
28.36	1								
28.68	2								
29.00	2							1	
29.18	2							1	
29.36	2								
29.50							1		
30.00	583	195	12,364	418			1	383	24
30.50	1						1		
30.68	1								
30.75	1						1		
31.00	1						1		
31.25	1						1		
32.00			10				2		
32.18	1								
32.36	1								
32.50	2						2		
33.00	2						1		
33.36	1								
33.50	2								
34.00	1		1		1				
34.18	3								
34.50	4				1				

EXHIBIT 7.—*Statement showing, by classes, the different monthly rates paid to pensioners and the number at each rate on roll June 30, 1908*—Continued.

Rate.	Regular establishment.		Civil war.					War with Spain.	
			General law.		Act June 27, 1890.		Act Feb. 6, 1907.		
	Invalids.	Widows, etc.	Invalids.	Widows, etc.	Invalids.	Minors, etc.		Invalids.	Widows, etc.
$34.86	2								
35.00	1								
35.50	1						1		
35.68	4								
36.00	3		48				1	4	
36.18	1							1	
36.50	2								
37.00							1		
37.18								1	
37.36	1								
37.50	2								
37.68	2								
37.86	1								
38.00	2								
38.18	1								
38.36	1								
39.86	1								
40.00	137		2,637		1			95	
40.50	1								
41.00	1						1		
41.68								1	
41.86	1								
42.00	1						1		
42.36	1								
42.50							1		
42.68	1							1	
43.00	2								
43.50	1				1		1		
44.00	1								
44.50	1								
45.00			11		1		2	1	
45.50	1								
46.00	67		1,509				1	57	
46.18	1								
47.00	2				1		1		
47.50	1		1						
48.00			1						
48.50	1								
48.86								1	
50.00	63		1,140	1				59	
50.36								1	
52.00	3								
52.68	1								
55.00	31		1,704					32	
55.36	1								
57.50	1								
58.00	1								
59.00	1		1						
60.00	1		3						
61.18	1								
62.36	1								
62.86	1								
72.00	65		773					39	
75.00			3						
82.50	1								
88.00	1								
94.86	1								
100.00	28		545					8	
100.18	2								
106.00	1							1	

EXHIBIT 8.—*Statement showing, by classes, the different monthly rates paid to pensioners under special acts of Congress and number at each rate on roll June 30, 1908.*

Rate.	Regular establishment.		Civil war.		Army nurses.	War with Spain.		War of 1812, widows.	War with Mexico.		Indian wars.	
	Invalids.	Widows, etc.	Invalids.	Widows, etc.		Invalids.	Widows, etc.		Survivors.	Widows.	Survivors.	Widows.
$6.00	5		7			6	1					
8.00	10		39	15		22			4	1	20	
8.50			1									
10.00	7		13	3		9						
12.00	39	74	373	1,659	103	66	67	5	26	293	7	111
14.00	2		25	3		2						
15.00	1	5	18	90		3	2			1	1	
16.00	3		39	238		2		2	1	15	124	
17.00	9	5	128	145		10	6					
17.50			1									
18.00		3	14	48		1	1	1		1		
20.00	5	23	480	482	7	12	13	2	315	4	2	1
22.00		1	11	2		1						
24.00	13		3,971	55	1	17		14	2			1
25.00	1	28	38	117	9		24	1	1	1		
27.00			2									
28.00	5											
30.00	11	62	3,425	172		32	18		29	6		
32.00				2								
33.00			1									
35.00		24	1	9			8					
36.00	2		223	1		1						
40.00	6	52	333	15		2	8			1		
42.00				1								
45.00	1	1	36	1								
46.00	3		16			1						
49.00			1									
50.00	6	80	194	70		8	12					
55.00			25			1						
60.00	1		15									
65.00			4									
67.00			1									
70.00			1									
72.00	2		31			1						
75.00		2	1	5			1					
100.00	1	4	23	8		1						
125.00		1										
166.66⅔				3								
208.33⅓		1										
416.66⅔				1								
Total..	133	366	9,491	3,145	120	198	161	25	378	323	154	113

EXHIBIT 9.—*Report of certificates issued during fiscal year ended June 30, 1908.*

Classes.	Original.	Increase.	Additional.	Reissue.	Restoration.	Renewal.	Supplemental.	Total.
General law:								
Army—								
Invalids	14	10,350		175	33	939	33	11,544
Nurses	6	2						8
Widows, etc	2,247	58		84	22	572	9	2,992
Navy—								
Invalids	1	67		3		4		75
Widows, etc	13	3		3	1	1		21
Old wars—								
Invalids		1						1
Widows	4	1				1		6
War with Spain—								
Army—								
Invalids	1,839	1,071		116	30	46		3,102
Widows, etc	292	2		3		3	1	301
Navy—								
Invalids	56	45		4	1	2		108
Widows, etc	16	4				1		21
Regular establishment—								
Army—								
Invalids	890	524		50	4	10		1,478
Widows, etc	209	17		2		1	2	231
Navy—								
Invalids	422	107		29	5	20	2	585
Widows, etc	104	8					1	113
Act of June 27, 1890:								
Army—								
Invalids	1,837	4,786	323	92	30	56	154	7,278
Widows, etc	14,770	479		42	25	22	39	15,377
Navy—								
Invalids	235	294	9	9	3	2	18	570
Widows, etc	565	34		1	1	2	1	604
Act of Feb. 6, 1907:								
Army: Civil war	8,729	16,784		223,525	2	190	194	249,424
Navy: Civil war	727	560		6,463	1	5	1	7,757
Mexican war	1	8		663		1	1	674
Act of Apr. 19, 1908:								
Army widows	4,006	1				25		4,032
Navy widows	227					1		228
War with Mexico, act 1887, etc.:								
Survivors	7	3		16	1	1	7	35
Widows	298	45						343
War of 1812: Widows	1	7						8
Indian wars:								
Survivors	44	76				2		122
Widows	131	18				1		150
Total	37,691	35,355	332	231,280	159	1,908	463	307,188
Duplicates								2,764
Accrued								18,724
Grand total								328,676

Certificates issued each month during fiscal year ended June 30, 1908.

July, 1907	29,849	February, 1908	30,733
August, 1907	27,559	March, 1908	23,648
September, 1907	19,200	April, 1908	16,570
October, 1907	39,656	May, 1908	14,840
November, 1907	38,327	June, 1908	15,880
December, 1907	34,286		
January, 1908	38,128	Total	328,676

EXHIBIT 10.—*Classification of pending claims, June 30, 1908.*

Civil war:			
General law—			
Original invalid	662		
Reissue invalid	1,312		
Increase invalid	12,816		
		14,790	
Original widows	3,934		
Reissue widows	785		
Increase widows	137		
		4,856	
Original minors	721		
Reissue minors	26		
Increase minors	82		
Original dependents	142		
Army nurses	29		
		1,000	
			20,646
Act of June 27, 1890—			
Original invalid	2,900		
Additional invalid	363		
Increase invalid	2,246		
		5,509	
Original widows	14,864		
Supplemental widows	309		
Original minors	1,551		
		16,724	
			22,233
Act of March 3, 1901—			
Remarried widows			882
Act of February 6, 1907—			
Original	3,537		
Reissue	10,817		
Increase	2,555		
		16,909	
Act of April 19, 1908—			
Original widows		17,005	
			77,675
Regular establishment:			
Original invalid	3,325		
Increase invalid	864		
		4,189	
Original widows	291		
Original minors	35		
Original dependents	214		
		540	
			4,729
War with Spain:			
Original invalid	16,384		
Increase invalid	1,791		
		18,175	
Original widows	597		
Original minors	61		
Original dependents	447		
		1,105	
			19,280

Mexican war:			
Survivors (act January 29, 1887)	31		
Survivors (act February 6, 1907)	17		
Increase	11		
		59	
Widows (act January 29, 1887)	244		
Widows (act March 3, 1901)	1		
Widows increase	2		
		247	
			306
Indian wars (acts of July 27, 1892; June 27, 1902, and May 30, 1908):			
Survivors		141	
Widows		146	
			287
Old wars:			
Original invalid	13		
Increase invalid	18		
		31	
Original widows	21		
Increase widows	1		
		22	
			53
Accrueds			21,153
Total			123,483

Agencies, dates of payment, and districts.

AUGUSTA, ME.

Quarterly payments March 4, June 4, September 4, and December 4.
District.—The State of Maine. Navy pensioners in this district are paid at Boston, Mass.

BOSTON, MASS.

Quarterly payments March 4, June 4, September 4, and December 4.
District.—The States of Connecticut, Massachusetts, and Rhode Island, and all navy pensioners residing in this and the Augusta and Concord districts.

BUFFALO, N. Y.

Quarterly payments January 4, April 4, July 4, and October 4.
District.—The counties in the State of New York not in the New York City district. All navy pensioners in the State are paid at New York City.

CHICAGO, ILL.

Quarterly payments January 4, April 4, July 4, and October 4.
District.—The State of Illinois, and all navy pensioners residing in this and the Columbus, Des Moines, Detroit, Indianapolis, Louisville, Milwaukee, and Topeka districts.

COLUMBUS, OHIO.

Quarterly payments March 4, June 4, September 4, and December 4.
District.—The State of Ohio. Navy pensioners in this district are paid at Chicago.

CONCORD, N. H.

Quarterly payments January 4, April 4, July 4, and October 4.
District.—The States of New Hampshire and Vermont. Navy pensioners in this district are paid at Boston.

DES MOINES, IOWA.

Quarterly payments January 4, April 4, July 4, and October 4.
District.—The States of Iowa and Nebraska. Navy pensioners in this district are paid at Chicago.

DETROIT, MICH.

Quarterly payments March 4, June 4, September 4, and December 4.
District.—The State of Michigan. Navy pensioners in this district are paid at Chicago.

INDIANAPOLIS, IND.

Quarterly payments February 4, May 4, August 4, and November 4.
District.—The State of Indiana. Navy pensioners in this district are paid at Chicago.

KNOXVILLE, TENN.

Quarterly payments February 4, May 4, August 4, and November 4.
District.—The States of Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Texas. Navy pensioners in this district are paid at Washington, D. C.

LOUISVILLE, KY.

Quarterly payments February 4, May 4, August 4, and November 4.
District.—The State of Kentucky. Navy pensioners in this district are paid at Chicago.

MILWAUKEE, WIS.

Quarterly payments January 4, April 4, July 4, and October 4.
District.—The States of Minnesota, North Dakota, South Dakota, and Wisconsin. Navy pensioners in this district are paid at Chicago.

NEW YORK CITY, N. Y.

Quarterly payments February 4, May 4, August 4, and November 4.
District.—The following counties in the State of New York: Albany, Clinton, Columbia, Delaware, Dutchess, Essex, Greene, Kings, Nassau, New York, Orange, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Suffolk, Sullivan, Ulster, Warren, Washington, and Westchester. The following counties in the State of New Jersey: Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Passaic, Somerset, Sussex, Union, and Warren; all navy pensioners in the State of New York, and all pensioners residing in the island of Porto Rico.

PHILADELPHIA, PA.

Quarterly payments February 4, May 4, August 4, and November 4.
District.—The following counties in the State of Pennsylvania: Berks, Bradford, Bucks, Carbon, Chester, Columbia, Dauphin, Delaware, Lackawanna, Lancaster, Lebanon, Lehigh, Luzerne, Monroe, Montgomery, Montour, Northampton, Northumberland, Philadelphia, Pike, Schuylkill, Sullivan, Susquehanna, Wayne, Wyoming, and York. The following counties in the State of New Jersey: Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Ocean, and Salem, and all navy pensioners in the State of Pennsylvania.

PITTSBURG, PA.

Quarterly payments January 4, April 4, July 4, and October 4.
District.—The counties in the State of Pennsylvania not in the Philadelphia district. All navy pensioners in the State are paid at Philadelphia.

SAN FRANCISCO, CAL.

Quarterly payments March 4, June 4, September 4, and December 4.

District.—The States of California, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming; the Territories of Alaska, Arizona, and Hawaii; the Philippines, Guam, and the Samoan Islands belonging to the United States; including all navy pensioners.

TOPEKA, KANS.

Quarterly payments February 4, May 4, August 4, and November 4.

District.—The States of Colorado, Kansas, Missouri, and Oklahoma; and the Territory of New Mexico. Navy pensioners in this district are paid at Chicago.

WASHINGTON, D. C.

Quarterly payments March 4, June 4, September 4, and December 4.

District.—The States of Delaware, Maryland, Virginia, and West Virginia; the District of Columbia; all pensioners residing in foreign countries, and all navy pensioners residing in this and the Knoxville districts.

REPORT OF THE COMMISSIONER OF PATENTS.

REPORT OF THE COMMISSIONER OF PATENTS.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., September 26, 1908.

SIR: I have the honor to submit herewith the following report of the business of the United States Patent Office for the fiscal year ended June 30, 1908:

Applications and caveats received during fiscal year ended June 30, 1908.

Applications for patents for inventions	58,527
Applications for patents for designs	1,091
Applications for reissues of patents	207
Applications for registration of trade-marks	7,467
Applications for registration of labels	810
Applications for registration of prints	339
Total applications	68,441
Caveats	2,036
Disclaimers	9
Appeals on the merits	1,250
Total applications, caveats, disclaimers, and appeals	71,736

Applications awaiting action.

Applications awaiting action on the part of the office July 1, 1908	20,043

Applications for patents, including reissues, designs, trade-marks, labels, and prints.

June 30, 1899	40,320	June 30, 1904	55,468
1900	45,270	1905	66,228
1901	48,075	1906	68,881
1902	51,258	1907	66,795
1903	54,256	1908	68,441

Applications awaiting action on the part of the office.

June 30, 1899	2,989	June 30, 1904	13,069
1900	3,564	1905	16,077
1901	7,683	1906	21,958
1902	11,042	1907	13,634
1903	9,842	1908	20,043

Patents withheld and patents expired.

Letters patent withheld for nonpayment of final fees	6,520
Letters patent expired	24,270
Applications allowed, awaiting payment of final fees	11,843

Patents granted and trade-marks, labels, and prints registered.

Class.	1904.	1905.	1906.	1907.	1908.
Letters patent	31,257	29,680	31,070	33,644	34,003
Design patents	613	458	633	529	748
Reissue patents	109	128	134	165	151
Trade-marks	2,213	1,426	10,408	8,798	6,135
Labels	1,044	1,028	741	660	636
Prints	257	345	354	325	279
Total	35,493	33,065	43,340	44,121	41,952

Expenditures.

	Expended.	Estimated liabilities.	Total.
Salaries	$964,053.62		$964,053.62
Scientific library	1,889.18	$583.36	2,472.54
Postage on foreign matter	1,019.00		1,019.00
Stationery	13,089.92		13,089.92
Furniture	2,217.50		2,217.50
Carpets, linoleum and matting	1,335.94		1,335.94
Ice	674.91		674.91
Telephones	608.94		608.94
Washing towels	105.78		105.78
Sundries	14,050.63		14,050.63
Law library	450.85	36.00	486.85
Photolithographing, paid contractor	134,124.24		134,124.24
Photographic printing, paid contractor	5,875.76		5,875.76
Official Gazette and indexes, paid Public Printer	119,526.70	9,370.00	128,896.70
Printing and binding:			
Printing specifications	314,528.86		314,528.86
Miscellaneous printing and binding	24,000.82		24,000.82
International Convention for Protection of Industrial Property		750.00	750.00
Total	1,597,552.65	10,739.36	1,608,292.01

Receipts and expenditures.

Receipts from all sources	$1,874,180.75
Expenditures (including total in all appropriations)	1,608,292.01
Surplus	265,888.74

Comparative statement.

June 30—	Receipts.	Expenditures.
1899	$1,209,554.88	$1,148,663.48
1900	1,358,228.35	1,247,827.58
1901	1,408,877.07	1,288,970.13
1902	1,491,538.85	1,329,924.63
1903	1,591,251.04	1,423,094.40
1904	1,663,879.99	1,469,124.40
1905	1,737,334.44	1,472,467.51
1906	1,811,297.84	1,538,149.40
1907	1,859,502.89	1,584,489.70
1908	1,874,180.75	1,608,292.01

Summarizing these tables, there were received in the last fiscal year 58,527 applications for mechanical patents, 1,091 applications for designs, 207 applications for reissues, 2,036 caveats, 7,467 applications for trade-marks, 810 applications for labels, and 339 applications for

prints. There were 34,902 patents granted, including reissues and designs, and 6,135 trade-marks, 636 labels, and 279 prints were registered. The number of patents that expired was 24,270. The number of allowed applications which were by operation of law forfeited for nonpayment of the final fees was 6,520. The total receipts of the office were $1,874,180.75; the total expenditures were $1,608,292.01, and the net surplus of receipts over expenditures, being the amount turned into the Treasury, was $265,888.74.

The net surplus for the fiscal year ending June 30, 1907, was $275,103.19, and for the past fiscal year $265,888.74, so that the surplus is less by $9,214.45. The number of patents, trade-marks, labels, and prints, patented and registered in the fiscal year 1907 was 44,121, and in 1908, 41,952, which shows a falling off of 2,169. The cost of printing same in the fiscal year 1907 was $271,178.48, and for the fiscal year ending June 30, 1908, $314,528.86.

Although the number of patents issued was less by 2,169, the cost of printing the same was $43,354.38 more than in 1907. This is accounted for by the fact that the charges for printing made by the Government Printer was, during a portion of the past fiscal year, much greater than in previous years. Otherwise the net surplus for the present fiscal year would have exceeded the net surplus of last year by some $40,000 or $50,000 or more, as there has been a saving in the publication of the Official Gazette by cutting down the number of claims printed therein by only printing five claims of each patent, thereby reducing the cost of that publication by several thousand dollars. The falling off in the number of patents, trade-marks, labels, and prints registered and issued from 44,121 in 1907 to 41,952 in 1908 is accounted for by the fact that the number of registrations of trade-marks is gradually diminishing. In 1905, 10,408 trade-marks were registered under the new law; in 1907, 8,798, and in 1908, 6,135, which latter number will probably be about the normal number hereafter issued. The trade-marks registered are less this year by 2,663 than the previous year. Labels are less by 24 and prints by 46. There was an increase in the number of mechanical patents granted of 339. There were 66,795 applications for patents, trade-marks, labels, and prints filed in 1907 and 68,441 in 1908, an increase of 1,646 over the previous year. It will thus be seen that the volume of business from all sources is about the same as that during the fiscal year 1907.

I think it advisable to renew some of the recommendations made to you in my report for the last fiscal year. Although Congress has been fairly liberal in making appropriations for this bureau for the fiscal year ending June 30, 1909, yet I deem it important that some of the immediate necessities of this office should be again presented.

ADDITIONAL ROOM.

The additional room assigned this office has resulted in a vast improvement in the facilities for transacting the business of the bureau. I desire to say, however, that the volume of work is growing so uniformly from year to year it calls for additional space, and I deem it of the utmost importance that my recommendations in my report for the last fiscal year should be again urged herein, to the end that you will again favorably consider the question of causing the building to be so remodeled that further rooms may be provided for the examining and other divisions of the office. For the scientific library, which is much crowded, shelving space and additional steel stacks are required to accommodate the books now in possession of the library and those that have been purchased in this country and abroad and others that will be purchased from time to time for the use of the library and paid for out of the regular annual appropriations therefor. Additional shelving is also required for the foreign patents.

When the estimates were made for installing the present steel stacks in 1901 they were made on the basis of space required for ten years. Austria had issued no patents, and the output of France was only 18 volumes per annum; Austria now has *32 volumes a year*, and France *50*, while Germany has very nearly doubled, from *80 to 140*, and England has made a very sensible increase. It is now estimated that provision should be made for shelving (steel stacks), at the rate of 150 linear feet per annum. Therefore there is required for additional accommodations at the present time and for the ensuing ten years 1,500 linear feet of steel book stacks. For this purpose I recommend that the Congress be asked to appropriate $2,000, or so much thereof as may be necessary, for said purpose. Additional storage space for copies of patents and also room for inventors and attorneys making searches and transacting other business in that portion of the building are badly needed. In this report I shall merely invite your attention to the plans for the remodeling of the building which you caused to be made by the Supervising Architect of the Treasury Department and also the Superintendent of the Capitol Building and Grounds. These plans, if carried out, would result in a great relief not only to this bureau, but probably to some other bureaus of your Department as well. However, with these changes, it will only afford relief for the Patent Office for one or two years at best, as the bureau is growing so rapidly, keeping pace with the growth of the country and the trade and commercial activities of the nation, that the erection of a new building for the use of this bureau will soon be imperative.

The net surplus of all years of receipts over expenditures which have been covered into the Treasury up to June 30, 1908, shows a

grand total of $6,972,070.38. Nearly this whole sum has been paid by the inventors of the country, and inasmuch as they have paid the total expenses for the maintenance of the Patent Office, it is but fair to say that they are entitled to have a suitable building provided in which their business can be transacted in a prompt and efficient manner. The cost of this building and ground could be entirely paid for out of this surplus and I most earnestly urge that Congress be asked to make provision for an adequate building for the use of the United States Patent Office. Permit me to say in connection with this recommendation that the patent offices of Great Britain and Germany have outgrown their former building accommodations, and each of those countries has erected new buildings which are vastly superior in every respect to the one that now houses the United States Patent Office. A bill was introduced in the Senate at the last session of Congress providing for a new building for the Patent Office, and I most strongly urge that Congress be asked at the forthcoming session to pass that bill or a similar one, for the reason that before the time a proper building could be erected and ready for occupancy it will be very badly needed.

FORCE AND SALARIES.

I also respectfully call your attention to my former recommendations for increase of force and salaries which you approved and which you placed before Congress at the last session. The estimates made at that time called for a material increase of force and salaries. Congress granted in part only the requests then made. As those estimates for the force and salaries were very carefully considered, and were not overestimated in any particular, I desire to urge that additional relief be given to this bureau in those respects. I therefore make the following recommendations which I have embraced in my estimates submitted:

That the salary of the Commissioner of Patents be raised from $5,000 to $6,000 per annum, an increase of $1,000; that the salary of the assistant commissioner be increased from $3,500 to $5,000, an increase of $1,500, and that he be known in the future as first assistant commissioner; and I also recommend that an additional assistant commissioner at a salary of $4,500 per annum be provided. I make this recommendation for the reason that the business of the office has increased enormously since these offices were created and the time of the commissioner and assistant commissioner is now mainly occupied in hearing cases on appeal and other judicial duties. During the past year judicial matters have been presented and passed upon by the commissioner and assistant commissioner and decisions ren-

dered in *2,840* cases. The following statement shows the work of the three judicial tribunals:

Appeals taken to commissioner in interferences	128
Appeals taken to commissioner in ex parte cases	117
Interlocutory appeals to commissioner	207
Appeals taken from examiner of trade-marks	31
Petitions from examiner's rulings	469
Motions for rehearing	47
Petitions under rule 78	1,502
Petitions to revive abandoned cases	212
Total	2,713
Decisions rendered by commissioner:	
Appeals in interference cases	130
Appeals in ex parte cases	117
Appeals (interlocutory)	306
Appeals from examiner of trade-marks	21
Petitions from examiner's rulings	505
Motions for rehearing	47
Petitions under rule 78	1,502
Petitions to revive abandoned cases	212
Total	2,840
Appeals taken to examiners in chief in interferences	187
Appeals taken to examiners in chief in ex parte cases	622
Total	809
Decisions by examiners in chief:	
Appeals in interferences	152
Appeals in ex parte cases	633
Total	785
Interferences declared by examiner of interferences	1,548
Cases finally disposed of by examiner of interferences	1,605
Motions and interlocutory actions	8,312
Total	11,465

Appeals lie from the commissioner and assistant commissioner to the United States court of appeals of the District of Columbia to the extent that 50 per cent or one-half of the total business of that court consists in hearing and passing upon such appeals. In addition to the judicial duties, the commissioner and assistant commissioner are also the executive heads of the bureau and are called upon to act in the capacity of executive or ministerial officers.

I also desire to recommend that the salaries of the board of examiners in chief, the next lower judicial tribunal of the office, be increased from $3,000 to $4,500 each, which would call for an additional appropriation for this board of three members of $4,500. Their duties are wholly judicial. Also the salary of the examiner of interferences, a

court of first instance in this bureau, be increased from $2,700 to $4,000, as his duties, like the others above mentioned, are judicial. It is also asked that the salaries of the two law examiners be increased from $2,750 to $3.000, which will be a total increase of $500; that a chief of classifications be created at a salary of $3,600. This work calls for a man who must have had both legal and technical training; also that the salary of the examiner of trade-marks and designs be increased from $2,700 to $3,600, an increase of $900.

I also recommend that the salary of the 42 principal examiners in the office be increased from $2,700 to $3,000, as approved by you in my last report, and an increase of 10 fourth assistant examiners at $1,500, an increase of $15,000. I desire to use these 10 assistants as a force to classify patents and digest publications of scientific subjects relating to patents for the use of the examiners and inventors. They will form the force of the chief of the new classification division, which is of the utmost importance and should be established at once. With a proper classification or digest of all patents of all nations and technical and scientific publications, the cost in salaries and numbers of examiners will be greatly reduced and the search work in the examination of applications for patents will be reduced to a minimum and the facilities for making validity and other searches on the part of manufacturers, inventors, and attorneys vastly improved. This system of classification is imperative, owing to the fact that the United States has issued 900,000 patents to date, and the office, in addition to that number, has 1,000,135 foreign patents. In making searches the examiners are required to search both the United States and foreign patents, and works in the scientific library, which consumes, under the present arrangement of classes, much valuable time that would be thus in a great degree obviated. I have recently had occasion to inspect the patent offices of other leading nations, and I find the classification systems much more perfect than the one existing in our own office. The best technical talent obtainable is required for this work, and consequently I have placed the salary of the proposed chief of this division at a figure fairly commensurate with the work and duties of the position.

I also ask that the salary of the financial clerk be increased from $2,250 to $2,500, an increase of $250. I desire to say in connection with this official that he gives a very heavy bond, and is called upon to handle in the course of a year about two millions of money, a large portion of which comes loosely through the mails, and that during the term of the present incumbent not a single dollar has been lost. I also ask that one translator of languages be provided at $1,800. This officer would be called upon to translate patents in the languages of many countries, and his services would be much needed. I also ask an increase of 5 clerks of class 2, an increase of $7,000; an

increase of 10 clerks of class 1, increase of $12,000; an increase of salaries of 3 draftsmen from $1,200 to $1,500, an increase of $900; an increase of salaries of 4 draftsmen from $1,000 to $1,200, an increase of $800; an increase of 5 clerks at $1,000, an increase of $5,000; an increase of 1 messenger at $840. I also ask for 42 classified laborers at $480, each in lieu of 14 laborers at $600 each, and 15 laborers at $480 each, an increase of 13 persons and $4,560; and 40 messenger boys at $420, in lieu of 39 at $360, an increase of $2,560.

I make these recommendations in regard to classified laborers as I propose utilizing them—one in each examining division of the office in an endeavor to cut down the expense of additional examiners. It will be a great saving in the time of the assistant examiners who are now called upon to put away drawings and other work not strictly technical examining work. These are in lieu of 14 messengers at $600 and 15 at $480, making 29 in all which have been transferred to the superintendent's force of the Department.

I asked for 49 examiners at the last session and was only granted 33. These men are absolutely necessary, as set forth in my previous report. Since the last appropriation act increasing the salaries of the examining corps went into effect one principal examiner has resigned at $2,700; four second assistants at $2,100; three third assistants at $1,800; and three fourth assistants at $1,500, and four others have notified me of their intention to resign within a month, but I hope to be able to retain a large majority of the examiners in the office even at the present salaries, and therefore make no recommendation as to increase of salaries of the assistant examiners of the office at the present time.

CONDITION OF THE WORK.

The work of the office has been and still is very much in arrears, but with the additional force allowed by Congress and available July 1 it will be possible after the new examiners have had a few months' experience to bring the work practically up to date in all the examining divisions of the office, probably by December 31, 1908.

MODELS.

The legislative, executive, and judicial appropriation act, which became effective July 1, ultimo, embraces a provision in relation to the model records as follows:

For rent of rooms in the Union Building for Patent Office model exhibit during so much of the fiscal year nineteen hundred and nine as may be necessary, and for necessary expenses of removal and storage of said exhibit, nineteen thousand five hundred dollars: *Provided*, That a commission, which is hereby created, to consist of the Secretary of the Interior, the Commissioner of Patents, and the Secretary of the Smithsonian Institution, shall determine which of the models of the Patent Office may be of

possible benefit to patentees or of historical value, such models thus selected to be cared for in the New National Museum Building, the remainder of said models shall before January first, nineteen hundred and nine, be disposed of by sale, gift, or otherwise, as the Commissioner of Patents, with the approval of the Secretary of the Interior, shall determine.

In pursuance of the provisions of this section, the commission organized in the office of the honorable Secretary of the Interior on the 29th of May, and steps were immediately taken to carry out the provisions of said act. The Commissioner of Patents was authorized to proceed with the details of the business of the removal of the models.

Under this authority some of the models have been placed in the Smithsonian Institution; 4,000 unapplied models have been sold, and the balance, which were deemed necessary to retain as records for office and court use, are being boxed, labeled, and catalogued and stored temporarily in the basement of the Department of the Interior building until the completion of the new building of the Smithsonian Institution, where the law directs they shall be finally deposited.

It is thought by October 31, 1908, all the models and cases will be moved from the third and fourth floors and the rental for the said floors will cease. The remaining models on the other floor, it is confidently expected, will be removed by December 31, and all rent for the balance of the fiscal year for the occupancy of these three floors will terminate. I will, in accordance with your directions in the matter, before the assembling of the next session in December, 1908, submit to you for transmission to Congress a full report of the proceedings relating to the matter.

CHANGES IN THE RULES OF PRACTICE.

Since my last report, certain changes have been made in the Rules of Practice. The amendment to rule 17, relating to attorneys practicing before this bureau, is one of the most important. The rule has been amended so that (*a*) persons may be admitted to practice before this bureau who are attorneys at law in good standing in any court of record in the United States or any of the States or Territories thereof, and (*b*) any person who is not an attorney at law who is a citizen or resident of the United States and shall file proof to the satisfaction of the commissioner that he is of good moral character and of good repute and possessed of the necessary legal and technical qualifications to enable him to render applicants for patents valuable service.

In a number of the foreign countries the practitioners before their respective patent offices were required to be subjects or citizens of that country. This requirement precluded a citizen of the United States from practicing before the foreign patent office in question, irrespective of his character and legal and technical attainments. Much

complaint has been made as to this practice, and therefore the rule was amended by the addition of the following provisions:

(*c*) Any foreign patent attorney not a resident of the United States, who is a citizen or subject of a country granting the same reciprocal rights to citizens of the United States, who shall file proof to the satisfaction of the commissioner that he is registered and in good standing before the patent office of the country of which he is a citizen or subject, and is possessed of the qualifications stated in paragraph (*b*).

In order that the provisions of this rule may be carried out, the foreign patent attorneys of record have been required to file proof before November 1, 1908, that the patent offices of their respective countries will recognize a citizen of the United States to practice before the office, provided that citizen is otherwise qualified, or their names will be dropped from the roster of attorneys practicing before the United States Patent Office.

The second important amendment is that to rule 22. This rule has been amended so that the Secretary of the Interior may after notice and opportunity for a hearing suspend or exclude from further practice before the Patent Office any practitioner shown to be incompetent, disreputable, or who refuses to comply with the rules and regulations thereof, or who shall with intent to defraud or in any manner deceive, mislead, or threaten any claimant by word, circular, letter, or by advertisement, or who guarantees the successful prosecution of any application for patent. Under the old rule the commissioner only had power, with the approval of the Secretary of the Interior, to disbar a practitioner, either generally or in a specific case, for "gross misconduct." This rule was based upon section 487, Revised Statutes, the provisions of which have been held to be quite limited in their effect and to include practically only those cases in which a practitioner has actually committed fraud or misapplication of fees in the prosecution of an application. Under the new rule broader jurisdiction is permitted under the provisions of section 5 of the act of Congress approved July 4, 1884.

Rule 47 of the Rules of Practice has also been amended for the purpose of insuring the permanency of the records and patent applications as originally filed. It has long been the provision of the rule for all the application papers, when the oath is taken before an officer in a country foreign to the United States, to be attached together and a ribbon passed one or more times through all the sheets of the application and the ends of said ribbon brought together under the seal before the latter is affixed and impressed by the officer before whom the oath is taken, or else each sheet must be impressed with the official seal of that officer, or if he is not provided with a seal, then each sheet must be initialed by him. This rule has been amended so that its provisions shall be applicable to all applications filed in this office

whether the oath is taken abroad or in the United States. It is the belief that this new provision will prevent the substituting or in any manner changing the application papers by dishonest persons after filing, should any attempts to that end be made.

ADDITIONAL GAINS IN EFFICIENCY AND ECONOMY.

I am pleased to report that during the past year several features of office organization have been examined and some changes have been made which are in the interest of economy and the expedition of the public business. Until recently the Official Gazette of the Patent Office was distributed from this building. This work involved the packing of the Gazettes in bundles at the Government Printing Office and their delivery to this office, where the bundles were opened and the single copies prepared for mailing to subscribers. The Gazettes were again sacked and sent to the city post-office. The Gazette is now mailed from the Government Printing Office, the intermediate bundling and hauling thereof being eliminated, it going from the presses to the mailing department, where the Gazettes, when ready for transportation, are sacked for the various States and hauled to the Union Station, a square distant. This change in the method of handling the Gazette has released for other duties in this office the services of six clerks.

The organization of the "publications division" for the purpose of caring for and distributing copies of Patents, Laws, Rules of Practice, and other publications of the office has enabled all such publications to be brought under the supervision of one person, and has resulted in a more economic distribution than formerly, and at the same time has released three clerks for other work.

Under section 4885, before amendment of the said section by act approved May 23, 1908, an inventor whose application for patent had been allowed had six months from the notice of allowance as time within which to pay his final fee. The work of printing the specification and photolithographing the drawings and performing the other work incident to the issue of the patent required three or four weeks; yet the said section 4885 provided that every patent should bear date as of a day not later than six months from the time of the notice of allowance. As a result of this contradictory condition the office was compelled to resort to a fiction in all those allowed cases wherein the payment of the final fee was so delayed that the patent could not issue within the required six months, by sending to the applicant a notice that his case had been again examined and allowed. It was necessary to write more than 20,000 of such notices each year. The amendment to section 4885, Revised Statutes, above noted, has relieved the office of this anomalous condition, and while there has been no change in the time allowed the

applicant in which to pay his final fee, an additional period, limited to three months, is given the office in which to prepare the papers and issue the patent. This simple remedial legislation has been urged by my predecessors for many years, and its enactment by Congress at its last session changed a condition which long existed that entailed a considerable amount of unnecessary work being performed with a consequent needless expense, and also obviates the necessity of resorting to a legal fiction in the granting of patents.

The last general revision of the patent laws was had in 1870. At that time it was rarely that a deed of assignment conveyed title to more than one patent and in very few instances did such deeds contain as many as 1,000 words. The scale of fees established by the act passed in that year provided a maximum fee of $3 for all assignments of 1,000 words or over. Many of the industrial combinations which have been created in the last few years are based upon patent rights, and, with organization and reorganization among such concerns, the title in many cases to several hundred patents has been transferred. Only a few months ago, 26 deeds transferring titles to 2,592 patents were offered for record, and the legal fee of $78 was paid.

The work of recording the transfer of the 2,592 patents required the entire time of thirty clerks in the Patent Office for fifteen days. In another instance, the office received $3 for recording an assignment containing more than 20,000 words, but within a week furnished a certified copy of the same assignment for which it received $23. There were so many cases in which the office received no fair compensation for the work performed that it seemed only just to place the work of copying, whether recording or transcribing, upon the same basis, and an amendment to section 4934, Revised Statutes, was proposed by me. It is gratifying to state that by act approved May 27, 1908, the said section was amended to permit a charge of $1 for recording each paper containing 300 words or less, $2 for recording each paper including 1,000 words, and $1 additional for each additional 1,000 words or fraction thereof. This amendment has been productive of a marked increase in the office receipts, and it is expected that it will increase by $10,000 per year the fees heretofore received for recording patents and papers pertaining thereto.

The Official Gazette was established January 1, 1872, and selected illustrations, together with the claims of the patents granted from week to week were reproduced in the Gazette by photolithographic process. At that time the practice was inaugurated of preparing a brief in each allowed application, such brief containing the name of the inventor, the invention, the serial number, and date of filing of the case, the name of the examiner, the number of the class in which the invention had been assigned, and also a statement as to the number of claims allowed, and indicated the particular view of the drawings

illustrating the invention which was selected for reproduction in the Official Gazette. This "brief" had outlived its usefulness, but notwithstanding the fact, the office continued it until recently. One was thought necessary for each allowed case, in consequence of which more than 40,000 per year were latterly used, an average time of four or five minutes being required to properly prepare each brief.

Another economy instituted, which seems worthy of note, is the discontinuance of the long-standing practice of using the best quality of ledger paper, and binding in the most substantial and expensive manner those office blank books whose usefulness practically ends with their completion as records. In many cases, it was found that blank books used merely for the entry of current business were prepared as if they were to be subject to daily consultation through a long period of years.

The office retains a copy of the grant of each letters patent. For forty years these volumes of "patent heads" have been of uniform size, 12 by 16 inches, of the best quality of ledger paper, and bound in the most substantial manner, at a cost of about $12 per volume. The volumes were ponderous, and it was found that a great economy in storage space could be effected by reducing their size to 8 by 12 inches, at the same time preserving every feature of the older volumes.

Each year several thousand sheets of drawings not artistically executed are filed in the Patent Office. Such drawings, while presenting informalities, have been forwarded to the various examiners whose practice seems to have been to note the informality and require new drawings free from objection. A great majority of the drawings thus rejected could have been made acceptable to the Patent Office. The filing of other drawings as substitutes for those objected to has year by year created a mass of useless papers requiring considerable space for storage. With a view to arresting the further accumulation of unnecessary papers, the examiners have been prohibited from requiring a new drawing in any case until after the chief draftsman of the Patent Office has indicated the necessity therefor. It has been the practice to record and number miscellaneous communications to the office, even those asking copies of Patent Laws and Rules of Practice. This practice as regards the communications particularized has been discontinued, and during the year more than 15,000 written requests for Patent Laws and Rules of Practice have been inclosed with the desired publication and returned to the senders.

It is essential that two copies of each patent as issued be prepared for inspection, one for the examiner's classified set and the other for the attorney's room, where the searches are made by the profession. For many years it has been the practice to mount, by pasting on card-

board, the specifications and drawings of all patents as issued. On account of time being required for seasoning, the copies of patents thus mounted were not available for two or three weeks after the date of their issue, and when not properly seasoned they would require excessive space for storage. It cost the office $4,800 per year for the labor and materials used in mounting these copies of patents. At present the requirements of the case are met by printing two copies of the specifications and drawings on heavy paper, at a cost of $1,500 per year. This practice enables the copies of patents to be available on the date of their issue, and the old objection of bulkiness is entirely overcome.

On April 1, last, a new scale of prices for copies of the drawings and specifications of patents became effective, the former class and subclass rates of 2 and 3 cents, respectively, being abolished and a uniform price of 5 cents established, this being the price at which single copies have been sold for several years. The former rates of 2 and 3 cents for copies of patents increased the work of the office, and entailed considerable correspondence when class and subclass orders accumulated so that they could not be promptly filled, or certain patents in the class and subclass were exhausted. It is estimated that the average cost per copy of printed specifications and drawings of patents is between 4 and 5 cents, and there was no reason for continuing the sale of such copies at an actual loss. The time during which the new rate has been effective has been compared with the corresponding period of last year, and while there has been a decrease of 10 per cent in the number of copies ordered, there has been an increase of 5 per cent in the revenues therefrom. Comparatively, this would mean an increase of revenue of the office from this source of $15,000 per year.

TREATIES AND PROPOSED CONVENTIONS WITH FOREIGN COUNTRIES.

The several treaties and conventions entered into and also those about to be entered into with several nations will be of very great value to manufacturers and inventors of this country who have foreign trade relations.

The treaties between the United States and Japan signed at Washington May 19, 1908, and ratified by both governments and now proclaimed by the President of the United States, is of especial moment, in that it protects American patents and trade-marks in Japan, Korea, and China.

Respectfully submitted.

EDWARD B. MOORE,
Commissioner of Patents.

The SECRETARY OF THE INTERIOR.

STATEMENT OF THE COMMISSIONER OF EDUCATION.

STATEMENT OF THE COMMISSIONER OF EDUCATION.

DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION,
Washington, September 14, 1908.

SIR: I have the honor to submit the following statement of the operations of this Office for the fiscal year ended June 30, 1908:

I. EDITORIAL DIVISION AND DIVISION OF STATISTICS.

The action of the Congress at its recent session in making appropriations for the publication of two annual reports of the Commissioner of Education renders it possible to bring these reports more nearly up to date. The report for the year ended June 30, 1907, was sent to the Public Printer on the 20th of April, 1908. It consists of two volumes of approximately 1,200 pages in all. The last of the galley proofs were received at this Office on the 12th of September, and both volumes will doubtless be ready for mailing before the end of October.

The statistical matter of this report has been compressed by the omission of about 300 pages of detailed information respecting individual institutions. The omitted matter relates wholly to secondary schools. It is fully summarized in the tables which are presented. This compression has made it possible to throw all of the statistical chapters into the second volume of the report, and to devote the whole of the first volume to a fairly compact survey of the educational movements of the year and related topics.

The utmost effort has been put forth since the close of the scholastic year of 1908 to push the report for that year to early completion. The distribution of matter between the two volumes as indicated above facilitates this effort. The statistical information, voluntarily reported from educational systems and institutions, can not, under present conditions, be assembled and tabulated before the end of the calendar year. It is believed, however, that it will now be possible to prepare the statistical volume of the report for publication by that time; that is, to furnish the copy to the Public Printer not later than the first week in January. The first volume, on the other hand, does not depend upon the cooperation of so great a number of contributors, and can be made ready at an earlier date. It will, if possible, be

completed in manuscript by the first week in October. Allowing then two months for printing and binding the first volume and three months for printing and binding the second, the first volume of the 1908 report should appear in December, 1908, and the second volume in March, 1909. Inasmuch as half of the usefulness of these volumes depends upon the regularity and promptness of their appearance, especial attention has been devoted to cutting across any avoidable delays in their publication. This has been in accordance with your advice, and I think it will be found that the programme indicated above represents the utmost which can now be done in this direction.

The publication of the Bulletin of this Bureau was begun in 1906. The following is a complete list of the numbers already issued and of those now in press:

1906.

No. 1. The Education Bill of 1906 for England and Wales, as it passed the House of Commons. By Anna Tolman Smith.
No. 2. German views of American education, with particular reference to industrial development. By William N. Hailmann.
No. 3. State school systems: Legislation and judicial decisions relating to public education, October 1, 1904, to October 1, 1906. By Edward C. Elliott.

1907.

No. 1. The continuation school in the United States. By Arthur J. Jones.
No. 2. Agricultural education, including nature study and school gardens. By James Ralph Jewell.
No. 3. The auxiliary schools of Germany. Six lectures by B. Maennel, rector of Mittelschule in Halle. Translated by Fletcher Bascom Dresslar.
No. 4. The elimination of pupils from school. By Edward L. Thorndike.

1908.

No. 1. On the training of persons to teach agriculture in the public schools. By Liberty Hyde Bailey.
No. 2. List of publications of the United States Bureau of Education.
No. 3. Bibliography of education for 1907. By James Ingersoll Wyer, jr., and Martha L. Phelps.
No. 4. Music education in the United States: Schools and departments of music. By Arthur L. Manchester.
No. 5. Education in Formosa. By Julean H. Arnold.

Additional numbers are in course of preparation.

The Bulletin has been received with unmistakable favor, and it is at present one of the best channels through which the Bureau can render its proper service to the educational interests of the country. Much larger provision should, in my opinion, be made for conducting needed inquiries and investigations, the results of which may be reported through this publication.

The statistical division, in addition to the ordinary work of the year, as indicated above, has conducted three special inquiries, the

results of which will be published in the Bulletin. These relate to schools and departments of music, schools and departments of the manual arts, and public, society, and school libraries.

The effort to render the statistical inquiries more practical and exact, in order that the replies to such inquiries may be more informing, has been continued with the special assistance of Prof. George D. Strayer, of Teachers College, Columbia University. A closer coordination of the statistical work with that of the Bureau of the Census has been sought, and particular attention has been given to the effort to secure closer cooperation in statistical inquiries with the chief school officers of the several States and Territories. With this end in view, among others, the heads of the several State and Territorial education offices were invited to meet in conference with representatives of the Bureau of Education at Washington the 24th of February last. As far as I have been able to learn this is the first conference of the kind which has ever been held in this country. It was attended by thirty-six educational officers, representing as many States. The conference appointed a committee to act with the Bureau of Education in proposing a better basis of cooperation between the offices concerned, with particular reference to statistical inquiries and reports. This committee consists of State Superintendents H. C. Morrison, of New Hampshire; J. D. Eggleston, of Virginia; Payson Smith, of Maine; M. Bates Stephens, of Maryland, and J. H. Ackerman, of Oregon. Improvements of a substantial character are expected to follow upon the activity of this conference and its committee.

At the same time an effort is making to secure a more effective cooperation in the matter of reports and statistics between the Bureau and the school systems of our larger cities and towns. A representative of the statistical division, Mr. Marion Letcher, has visited the larger cities of the East on special detail from this Office, with a view particularly to studying their systems of records, accounting, and reports. Professor Strayer is assisting also in this field The object in view is to secure so much of uniformity in the statistical reports of the several cities as will facilitate the making of fair comparisons, with reference especially to those things in which such comparison may suggest real improvements in the school administration.

II. LIBRARY DIVISION.

Under the direction of the new chief of the library division, Mr. William Dawson Johnston, the library of the Bureau has been thoroughly overhauled and reorganized. The first task here was to strip the collection down to its most effective working basis, by the removal of all books and other matter no longer needed or suitable

for the purposes of such a special library. The pieces so removed were transferred to the Library of Congress and the District library, under the provisions of the legislative, executive, and judicial appropriations act of February 25, 1903. The following statement shows the number of pieces so transferred:

Bound volumes	26,851
Pamphlets	15,512
Periodical numbers	16,241
Total number of pieces	58,604

This constitutes, as I am informed, one of the largest transfers in the history of American libraries. It was made with a view solely to the increase of the working value of the library of the Bureau, and that end has clearly been attained. The building up of the collection and its more compact organization for working purposes has followed and accompanied this reducing process. There have been sent to the bindery 6,119 volumes, mostly of educational documents and periodicals; considerable beginning has been made in the assimilation of the catalogue with that of the Library of Congress; 3,796 volumes have been classified and catalogued; and the effort to complete the sets of periodicals, official documents, and proceedings of educational societies has been carried systematically forward. This work has been accompanied by the regular bibliographical service of the division, 166 bibliographies and numerous bibliographical memoranda having been prepared during the year.

In accordance with the act of January 12, 1895, publications of the Bureau to the number of 18,560 volumes have been transferred to the office of the superintendent of documents. With a view to future needs of the Office, 10 copies of each of its publications, so far as that number is found available, have been boxed and placed in fireproof storage as a reserve stock.

The accessions of the year, by gift, by exchange, by purchase, and by binding, number 6,831 volumes and 12,771 numbers of serial and periodical publications. This brings the present numbers in the library to approximately 62,002 bound volumes and 84,588 pamphlets and other unbound pieces, a total of 146,590 pieces.

It is clear that the above statement represents an extraordinary year's work, accomplished by a library division of only nine members, with such help as could be given from time to time by details from other divisions and from the force of the Department. The devotion and fidelity with which this work has been done is illustrated by the fact that two members of the division have within the year declined attractive offers of positions elsewhere, at a considerable advance in salary, in order that they might continue to do their part in this reorganization of the Bureau's library. The fact of chief significance is that the reorganized library is rendering a direct service

to the educational libraries of the whole country. A single phase of this service may be mentioned here, namely, the preparation for the Library of Congress of catalogue cards for new educational publications, not copyrighted. These cards are printed by the Library of Congress, in connection with its regular card-publication service, and so become available for the use of all other educational libraries.

To carry forward the work so well begun and make it more directly serviceable to the country at large, there is needed a considerable addition to the working force of the division and an increased appropriation for the purchase of books, as indicated in my estimates for the coming year, and the collection should be removed immediately to larger quarters of fireproof construction.

III. DIVISION OF CORRESPONDENCE AND RECORDS.

Steps were taken during the year toward the introduction of the flat-filing system for letters and other manuscripts, which has been fully installed since the close of the fiscal year.

The chief increase in the work of this division during the year was in the number of publications of the Bureau sent out (115,134, as against 95,321 the preceding year) and in the number of requests for such publications and acknowledgments of the same which were received.

IV. REPORTS REQUIRED BY STATUTE.

Under the provisions of its charter the National Education Association of the United States is required to report annually to the Commissioner of Education.

The commissioner of education of Porto Rico is required by law to make such reports through the governor as may be required by the Commissioner of Education of the United States.

In addition to the above, the reports of the following, which are rendered according to law to the Secretary of the Interior, have been referred by the Secretary to the Commissioner of Education: Reports of colleges of agriculture and the mechanic arts in the several States and Territories, the General Education Board, and the United States inspector for the Indian Territory, and those portions of the reports of the governors of the several Territories which related to education.

These reports have all been carefully examined in this Office, and with reference to several of them such statement as seemed called for has been made in turn by the Commissioner to the Secretary. The following items should be particularly noted here:

Agricultural and mechanical colleges.—Hawaii and Porto Rico have been added to the list of States and Territories entitled to share in the appropriations made by acts of Congress approved August 30, 1890, and March 4, 1907, for the more complete endowment and support

of colleges for the benefit of agriculture and mechanic arts, and each received the sum of $30,000 for the year ended June 30, 1908. There are now 50 States and Territories entitled to receive the benefits of the above-mentioned acts, and they have been paid the sum of $35,000 each, or the total sum of $1,750,000, for the year ending June 30, 1909. The institutions endowed under the said acts have a property valuation of nearly $100,000,000 and had an enrollment of 62,781 students in 1907. They are in a flourishing condition and are making effective use of the funds granted to them by the Congress.

General Education Board.—The capital account of the General Education Board on July 1, 1908, amounted to $38,313,100.29, a net reduction of $4,186,860.69 during the year. Gifts were made during the year from this account amounting to $4,404,159.92. The available income account amounted to $3,291,072.61. Of this amount $643,526.19 was appropriated to 34 educational institutions and for cooperative farm work in 6 Southern States. Conditional pledges, amounting to $2,227,171.03, have been made to 46 educational institutions and for agricultural demonstration work in the United States. These pledges are payable in installments covering from two to five years. The available income account of the Anna T. Jeanes fund for negro rural schools was $15,447.51, of which sum $13,643.79 was expended for negro rural schools.

V. EDUCATION IN ALASKA AND REINDEER FOR ALASKA.

EDUCATION IN ALASKA.

During the fiscal year ended June 30, 1908, the Bureau of Education maintained 59 United States public schools for natives of Alaska (of which 10 were established during the fiscal year), with an enrollment of 3,067 and an average attendance of 1,204.

In the summer of 1907 the erection of school buildings was undertaken on Diomede Island, in Bering Strait, at Kobuk Village, on Kobuk River about 300 miles from its mouth, at Igloo and Sinuk, on the Seward Peninsula, at Stevens Camp, Rampart, and Kokrines, on the Yukon River, at Nenana, on the Tanana River, and at Seldovia and Kenai, on Cook Inlet, making a total of 10 new school buildings. The coming of winter put a stop to building operations.

During the present summer school buildings are in process of construction at Noatak and Selawik, in northern Alaska; at Mountain Village, Pilot Station, Russian Mission, Hamilton, Nulato, Koyukuk, and Louden, on the Yukon River; at Iliamna, Susitna, and Kaguyak, in western Alaska, and at Petersburg, in southeastern Alaska, a total of 13 buildings. At Tyonic, in western Alaska, and at Douglas, in southeastern Alaska, buildings have been reconstructed for school purposes. At Point Ellis and Sitkoh Bay, in southeastern Alaska,

portable buildings were erected for the accommodation of summer schools at those places. Thus 27 additional buildings for school purposes have been provided during the two seasons 1907 and 1908, of which 23 are new and permanent buildings. Of these 23 buildings, 2 were constructed from the appropriation "Education of natives of Alaska, 1907;" 8 were constructed entirely from the appropriation for additional schools in Alaska, "Education of natives of Alaska, 1907–8;" 12 were constructed in part from that appropriation and are to be completed from the appropriation "Education of natives of Alaska, 1909." It has been found necessary to divide the cost of these 12 buildings between the two funds mentioned because of the impossibility of completing buildings begun in the spring of 1908 and not built under contract before the close of the then current fiscal year. The 1 remaining building is constructed entirely from the appropriation "Education of natives of Alaska, 1909."

To compress the work indicated above into the short time in which it has been accomplished has called for the utmost exertion on the part of the comparatively small supervisory and clerical force of the Alaska division, both in the field and in Washington. Strong commendation is due them for devoted service beyond what is compensated by salaries paid.

During the past summer Dr. Harlan Updegraff, the chief of the Alaska division of this Office, has spent several months in southern Alaska, making a thorough study of the educational service among the natives of that region. His attention has been directed particularly to the strengthening of the system of supervision in the field, and to the newer industrial and sanitary features of the work. Doctor Updegraff has not yet returned to Washington.

Steps have been taken to meet the pressing need of the natives of Alaska for medical aid. With the approval of the Secretary of the Interior a contract was entered into with the Holy Cross Hospital and with Dr. J. H. Mustard, of Nome, Alaska, for hospital care and medical treatment of destitute natives of Nome and its vicinity. A contract has also been entered into with Dr. H. R. Marsh, for the furnishing of medical treatment to destitute natives of Barrow and its vicinity, for the maintaining of sanitary conditions among the natives of Barrow, and for the making of a tour of the villages along the coast of the Arctic Ocean as far as Icy Cape twice during the current year, with a view to furnishing medical and surgical relief and securing sanitary conditions. A third contract has been made with Dr. J. H. Romig, of Nushagak, in western Alaska, for furnishing hospital care and medical relief to the natives of Nushagak and its vicinity and for the making of a tour for medical and sanitary purposes northward along the coast of Bristol Bay as far as Togiak and southward as far as Ugashik.

Dr. A. C. Muller has been appointed physician in the Alaska school service, with headquarters at Susitna, and assigned to the duty of extending medical aid and securing sanitary conditions among the natives of the Susitna Valley and of the Cook Inlet region. E. O. Campbell, E. A. Norton, and H. O. Schaleben, the teachers of the schools on St. Lawrence Island, at Nulato, and Iliamna, respectively, are physicians, and the treatment of the natives in their respective villages is included in their duties. In addition to the above, the teachers of Barrow, Wainwright, Icy Cape, Point Hope, Kivalina, Selawik, Noatak, Kotzebue, Deering, Shishmaref, Wales, Diomede, Teller, Igloo, Sinuk, St. Michael, Golofnin, and Unalakleet, in northern Alaska, and at Mountain Village, Pilot Station, Russian Mission, Anvik, Hamilton, Koyukuk, Louden, Stevens Camp, and Eagle, on the Yukon River, have been furnished with medical supplies to enable them to give nonprofessional aid to the natives.

It is proposed to contract with physicians at Haines and Sitka for the furnishing of hospital care and medical relief to the natives in the vicinity of those places. It is further proposed to employ two physicians to furnish medical relief and enforce sanitary measures throughout southeastern Alaska, one with headquarters at Juneau and the other with headquarters at Wrangell. During the present summer temporary schools have been conducted in the native camps at Point Ellis and at Sitkoh Bay with excellent results.

With the cooperation of Mr. C. C. Georgeson, special agent in charge of Alaska experiment stations, systematic instruction in elementary agriculture has been introduced as part of the curriculum of each school, where climatic conditions render such instruction possible, special effort being made to interest the entire native community.

In educational work for the natives throughout Alaska, efforts are making to shift the center of gravity from routine work by the children in the school room to the general improvement of the industrial, sanitary, and moral condition of the native communities, by a system of practical education for both children and adults.

The protection of the Alaskan natives from disease and the education of their children are matters of vital importance to the race. In order to accomplish the best results, legislation is desired to enable the Commissioner of Education, through a corps of physicians and the public school teachers, to enforce in the native villages a simple code of sanitary regulations, with a legal penalty for its nonobservance.

Experience has shown that in many sections of Alaska regularity of attendance in the public schools for natives can not be maintained without a legal penalty for truancy. The passage of a bill requiring the attendance of all children of school age, unless mentally or phys-

ically disqualified, is desirable. Failure to comply with the provisions of this bill should be made a misdemeanor upon the part of the parent or guardian of the delinquent child, punishable in the courts. In some villages it would be impracticable to enforce this law, because there is no United States commissioner nor United States marshal within a reasonable distance; in other villages no difficulty has arisen from this source. Accordingly, this bill should authorize the Commissioner of Education temporarily to suspend the operation of such a compulsory law for any specified village or district in Alaska. A bill containing the provisions outlined above was introduced into the last Congress and favorably reported in the House of Representatives.

The following is a summary of expenditures from the several funds for education of natives of Alaska:

Expenditure of appropriation for education of natives of Alaska, 1908.

Amount appropriated		$100,000.00
Salaries of officials and clerks	$10,100.00	
Salaries of three local superintendents	4,412.50	
Salary of special inspector, two months	200.00	
Salaries of teachers	45,587.50	
Supplies and equipment, including furniture for teachers' quarters	7,132.86	
Traveling expenses of teachers, superintendents, and officials	8,300.00	
Fuel and light	7,000.00	
Freight on equipment and supplies	1,700.00	
Repairs to buildings and grounds	4,200.00	
Erection of new buildings	6,302.74	
Relief of destitute natives, food, clothing, medical attention, etc	2,000.00	
Printing blanks, stationery, etc	397.14	
Reserved for contingencies	2,667.26	
Total		100,000.00

Expenditure of appropriation for education of natives of Alaska, 1907–8 (for additional schools).

Amount appropriated		$100,000.00
Architects' plans and blueprints	$418.20	
Salaries of two supervisors of construction	1,362.50	
Erection of buildings, including freight on materials	58,021.20	
Supplies and equipment, including furniture for teachers' quarters	9,990.00	
Freight on equipment and supplies	3,000.00	
Salaries of teachers	8,837.50	
Traveling expenses of teachers	2,000.00	
Fuel and light	3,500.00	
Reserved for contingencies	12,870.60	
Total		100,000.00

Proposed expenditure of the appropriation, education of natives of Alaska, 1909.

Appropriation		$200,000.00
Salaries of officials and clerks	$7,900.00	
Superintendent northern district	2,100.00	
Two assistant superintendents, northern district, at $1,500 each	3,000.00	
Superintendent southwestern district	1,700.00	
Superintendent southeastern district	2,000.00	
Salaries of teachers	68,000.00	
Traveling expenses of inspectors, superintendents, and teachers	15,000.00	
Text-books, stationery, apparatus, furniture, and industrial supplies	20,000.00	
Fuel and light	12,000.00	
Freight on supplies	5,000.00	
Repairs and rent	5,000.00	
Erection of school buildings	35,000.00	
Erection and equipment of workshops and sawmills	5,000.00	
Relief of destitution	5,000.00	
Sanitation and medical relief	10,000.00	
Reserved for contingencies	3,300.00	
Total		200,000.00

THE ALASKA REINDEER SERVICE.

Prior to June 30, 1907, reindeer stations had been established, as previously reported, at 15 points. During the fiscal year ended June 30, 1908, 9 additional reindeer stations were established, as follows: At Wainwright, Icy Cape, Kobuk, Council, Igloo, Sinuk, Golsovia, Shaktolik, and Egavik.

Reports have as yet been received from only 6 of the 24 herds in Alaska, hence it is not now possible to give reliable statistics regarding the number and distribution of reindeer at the various stations. The total number of domestic reindeer in Alaska, June 30, 1907, was 15,839. If the same rate of increase has prevailed as in previous years, the total should now be about 20,000.

The contracts and blanks for records and reports adopted during the previous year are proving extremely useful, and the reindeer industry is making healthy progress under the immediate supervision of Mr. W. T. Lopp, district superintendent of schools in the northern district of Alaska, and his assistants.

One new mission herd has been established during the past year, that at Sinuk, near Nome, under the control of the Woman's Home Missionary Society of the Methodist Episcopal Church.

The establishment of new centers of this industry, instead of indicating that the Government is going more largely into the reindeer business, provides for the more rapid distribution of the reindeer among the Alaskan natives, as contemplated in the recent appropriations of the Congress for this object. It will now be possible, in

my judgment, to reduce from year to year the appropriations of the Congress for the reindeer enterprise, and to reduce the holdings of reindeer by the National Government through a distribution of the reindeer to natives, directly from the Government herds and indirectly through the mission herds, and that without the waste which would be involved in turning any of the reindeer over to natives who are not trained to care for them intelligently.

The following is a summary of expenditures in the reindeer industry:

Expenditures of appropriation, reindeer for Alaska, 1908.

Amount appropriated		$9,000.00
Salaries of chief herders	$1,200.00	
Supplies for apprentices	5,412.09	
Freight on supplies	1,375.00	
Three cabins for herders	300.00	
Establishing new herds	500.00	
Printing blanks for records	192.28	
Reserved for contingencies	20.63	
Total		9,000.00

Proposed expenditure of appropriation, reindeer for Alaska, 1909.

Appropriation		$15,000.00
For salaries of chief herders	$2,000.00	
Support of apprentices	8,000.00	
Establishment of new herds	2,000.00	
Freight on supplies	1,500.00	
Reserved for contingencies	1,500.00	
Total		15,000.00

VI. RECOMMENDATIONS.

I beg to call your attention in particular to the estimates which I have submitted for the fiscal year of 1910.

Exclusive of provision for the education of natives in Alaska, the appropriations for the Bureau of Education are less in amount for this current year than they were ten years ago. The four important appropriations for library, distributing documents, collecting statistics, and rent are all of them less in amount than they were in 1881 and 1882. Aside from the Alaska school service, the net increase in the staff of the office, counting employees of every grade, within the past ten years, has been two copyists at a salary of $900 each per year. The addition of these two employees, together with the moderate increase in salaries made in recent appropriation acts, has increased the aggregate of the salaries in the Bureau, all told, in this ten-year period, by only 8.6 per cent.

The appropriations for the past ten years are shown in the following table:

Appropriations for Bureau of Education.

Year.	Salaries	Library.	Distributing documents.	Collecting statistics.	Rent.	Printing of annual reports.[a]	Total.
1900	$52,020	$250	$2,500	$2,500	$4,000	$32,922	$94,192
1901	53,620	250	2,500	2,500	4,000	33,444	96,314
1902	54,120	250	2,500	2,500	4,000	34,466	97,836
1903	54,740	250	2,500	2,500	4,000	31,280	95,270
1904	52,940	250	2,500	2,500	4,000	31,800	93,990
1905	52,940	250	2,500	2,500	4,000	32,740	94,930
1906	53,140	250	2,500	2,500	4,000	34,000	96,390
1907	54,940	250	2,500	2,500	4,000	20,000	84,190
1908	55,500	250	2,500	4,000	4,000	40,000	106,250
1909	56,500	500	2,500	4,000	4,000	20,000	87,500

[a] From 1900 to and including 1906 the sums given represent the actual cost of the Bureau's quota of the annual reports, which was paid from the appropriation for printing and binding for Congress. Since 1906 Congress has limited to $20,000 the amount that may be expended in the publication of each annual report. In 1908 provision was made for the publication of two reports, in order to bring such publication down to date.

In the meantime the reasonable demands upon the Bureau, within the scope of its statutory functions, have increased with the great expansion of educational activity in all of our States and Territories. The utmost effort has been put forth to meet these demands with the limited means provided. In cooperation with the Secretary's office, such rearrangement and reorganization has been made in the personnel of the Bureau as seemed best calculated to economize the working power of all, and labor-saving methods and appliances have been installed. The general funds of the Department of the Interior have been freely allotted to this office to meet such expenses as could lawfully be defrayed from those funds, and details of clerks from the Department have helped over times of unusual stress in the work of the office. I beg to express my appreciation of the assistance which has been extended in these and many other ways from the office of the Secretary of the Interior.

But the need of largely increased appropriations is more obvious and urgent than ever. The various items of increase asked for in the estimates which are submitted with this statement fall under the following heads:

1. An increase in the salaries of members of the office staff.

2. Provision for more commodious and fireproof housing of the Bureau, with its valuable collections and records.

3. The addition of several competent experts in different departments of American education, with a sufficient force of clerical assistants.

4. Provision for the conduct of special educational investigations and inquiries.

5. An increase in the appropriation for the library of the Bureau.

In addition to the above, there is need of an increase in the appropriation for education in Alaska, with a view to extending the system of sanitary and industrial education among the Alaskan natives.

All of which is respectfully submitted.

ELMER ELLSWORTH BROWN,
Commissioner.

The SECRETARY OF THE INTERIOR.

TWENTY-NINTH ANNUAL REPORT OF THE DIRECTOR OF THE UNITED STATES GEOLOGICAL SURVEY.

TWENTY-NINTH ANNUAL REPORT OF THE DIRECTOR OF THE UNITED STATES GEOLOGICAL SURVEY.

GEORGE OTIS SMITH, *Director.*

The appropriations for the work of the United States Geological Survey for the fiscal year 1907–8 comprised items amounting to $1,661,420. The plan of operations was approved by the Secretary of the Interior and a detailed statement of the work of the various branches and divisions of the Survey is presented on later pages of this report.

SPECIAL FEATURES OF THE WORK.

LAND CLASSIFICATION.

In the last few years the Geological Survey has broadened the scope of its work in the classification of the mineral lands of the public domain. At the time of the organization of the Survey the classification intended by Congress was believed to be general in character and such as could be expressed on maps issued for the general information of the people. The present interpretation of the law is that the classification should be more definite, and therefore, during the last year, the Survey has continued its special field surveys of the coal lands belonging to the Government. The geologic, topographic, and technologic branches of the Survey and the General Land Office have cooperated in these surveys, which have provided for the classification and valuation of the coal lands and for their prompt segregation from the noncoal lands. A total of 22,700 square miles of coal fields was thus classified, and the valuation of the coal lands, based not only on the geologic field examination but on chemical and physical tests of coal collected from these lands, was reported to the General Land Office.

Increased demands have also been made on the mining geologists of the Survey for assistance in determining the mineral or nonmineral character of land for which title from the Government is sought. In all this work the sole purpose of the Geological Survey is to deter-

mine the truth of the issue from the viewpoint of an independent and impartial mining engineer, and thus to protect the interests of the people.

MINING GEOLOGY.

The development of mining geology, or the application of the science of geology to mining operations, has been to a large extent the result of the activity of the United States Geological Survey, and the practical value of the Survey's contributions in this field has won for it world-wide recognition. The actual results have demonstrated to the mining industry its dependence upon geologic investigations. This record warrants the hope for further development in mining geology.

Incidental to the surveys for the classification of coal lands important results have been secured concerning the stratigraphic and structural relations of the coal fields of the West, and the knowledge of the occurrence and distribution of this most valuable mineral has been greatly increased. Similar systematic investigations of the oil fields of the country would yield results hardly less valuable; but even the increased attention paid to this subject during the last few years, resulting this year in the publication of nine reports relating to the geology of oil, has been insufficient to keep abreast of the development in this single branch of the mineral industry.

The goal to be sought in mining geology is the extension of systematic field surveys of all mineral deposits, so that geologic exploration may keep in advance of economic development. The prosecution of detailed areal mapping in all regions where active development of mineral deposits is in progress would result in making prospecting less expensive and more efficient and in winning a much larger proportion of the ore deposits wherever the areal and structural relations thus became known, and would therefore effect a double economy.

MINING TECHNOLOGY.

In January, at the suggestion of the Senate Committee on Mines and Mining and at the request of the Secretary of the Interior, the Director of the Geological Survey submitted a statement relative to the proposed establishment of another bureau in recognition of the mining industry. The part played by the Survey in the development of that industry in the last three decades was reviewed, and the effort was made to suggest legislation that would provide adequately for an increase in the mining work of the Federal Government without duplicating work already authorized. The opinion was expressed that the only true line of cleavage for separating the investigations concerned with the mining industry lies between the pure technology of the industry and those studies which relate to the distribution,

occurrence, origin, and production of mineral deposits. Such studies have formed an increasingly important part of the Geological Survey's work since its organization, so that the whole question resolves itself into the matter of making adequate provision for the other investigations now being conducted by the technologic branch of the Survey. The value of these investigations has been proved and their scope may well be expanded along technologic lines without duplicating or overlapping the work of other branches of the Survey.

On the basis of the historical development and present status of federal work in aid of the mining industry of the United States it was recommended that the function of any organization independent of the Survey should be limited to strictly technologic work, if duplication of work and rivalry are to be avoided. To that end it is important that the name of such an organization should indicate its particular function and nothing more. The word "mining" by itself is inappropriate for a bureau that would conduct only a part of those investigations which relate to mines and mining, and it was recommended that legislation establishing a new bureau should provide not for a "bureau of mining," but for a "bureau of mining technology." Such a bureau would supplement, along purely technologic lines, the geologic work of the Survey, and the two bureaus could cooperate in investigations carried on in behalf of the mining industry.

ALASKAN SURVEYS.

The progress of surveys in Alaska is shown in a table on page 41, which clearly sets forth the need for the rapid extension of both geologic and topographic mapping in the Territory. As the geologic mapping must form the basis for any fundamental study of the laws of occurrence and distribution of the mineral resources, it is evident that, with less than a fifth of the Territory mapped, no comprehensive treatment of the subject of its mineral wealth can yet be attempted. Geologic mapping necessitates the preparation of base maps, which in themselves are, indeed, among the most valuable results for the purposes of the prospector and the mine operator.

In addition to the demand for the completion of the topographic and geologic reconnaissance surveys, whose cost can be roughly estimated at $3 a square mile, there is urgent need for detailed mapping of the important mining districts. Such detailed work costs about ten times as much as the reconnaissance work and need be undertaken only in regions that give promise of becoming important producers of mineral wealth. As soon as a district is established as a producer it is economical to cover it by detailed topographic and geologic surveys at once, as the maps and reports thus become available when they are most needed by the mine operators.

The study of the water resources of Alaska, so far as they bear on the problem of placer mining, is well advanced, for, though only a comparatively small area has actually been surveyed hydrographically, the preliminary work in one of the most important placer districts is nearing completion and similar work in another has been well started.

MINERAL STATISTICS.

From the returns already received, it is known that the value of the mineral products of the United States in the calendar year 1907 exceeded a total of $2,000,000,000, and that, notwithstanding the financial depression which occurred in the latter part of the year, 1907 will be recorded as one of the most prosperous years, if not the most prosperous, in the history of the mining industry. It is interesting to note that the value of the mineral products in 1907 was approximately six times that of 1880, nearly four times that of 1887, and over three times that of 1897, only ten years before. An indication of the wonderful growth of the mineral industry, as recorded by the Survey's division of mineral resources, is afforded by the fact that the value of the coal product of 1907 was almost equal to the value of the entire mineral production of the United States ten years before. The work of keeping in touch with the new development that has caused this immense growth, and of procuring returns from the thousands of new operations, has greatly increased the work of this division of the Survey.

The endeavor to expedite the compilation and publication of the mineral statistics for 1907 has resulted in the issue of five chapters and the transmission of twelve others to the printer during the first half of the calendar year 1908, as contrasted with one issued and five others transmitted in the corresponding period last year.

The plan of cooperation between the divisions of geology and mineral resources, which is referred to in the last report, has continued with even more satisfactory results than were obtained during the two preceding years. This plan was adopted in the preparation of the volume on mineral resources for 1905, and as each geologist has become more acquainted with the statistical work and with the fact that the study of economic development is of coordinate importance with that of geologic conditions, he has entered with more enthusiasm into this work; and the chapters so far presented for publication bear effective testimony to the value of such cooperation. This method of intrusting the supervision of the statistical work to expert economic geologists was originated by Director King, and the return to the original plan is believed to have been fully warranted.

NATIONAL CONSERVATION.

The congressional enactment establishing the Geological Survey was inspired by an appreciation of the importance to the nation of its mineral resources. Since then the Survey's investigations have not only contributed largely to the development of the mining industry, especially in the public-land States, but have furnished quantitative data that are available at this time of popular awakening to the needs of national conservation.

The last year has been one of those periods through which any scientific work occasionally passes, in which the specific value and definite usefulness of results accomplished have been brought prominently into public notice. The people in general have learned to appreciate certain applications of the Survey's investigations, which heretofore have in large part appealed only to persons who had become familiar with its work by reason of their professions or special interests.

COAL RESOURCES.

The Survey's most notable contribution to the subject of national conservation during the year was the publication, on the eve of the governors' conference at the White House, of a map of the coal fields of the United States. This map presented both graphically and statistically the extent of the nation's coal reserves. Up to that time it had not been possible to prepare so accurate a map on account of lack of data regarding the shape and extent of many of the western coal fields and the quality of their coal, but during the last few years a large amount of such information has been obtained in connection with the classification and valuation of coal lands in the public-land States of the West. In carrying on this work the United States Geological Survey has mapped most of the important coal fields and has tested many of the coals, so that the information at hand was believed to be sufficiently complete and accurate to warrant its publication.

The table printed with this map shows the size, in square miles, of the coal areas represented on the map; the kind of coal; the production in 1906; the total production to January 1, 1908, including an estimate of production for 1907, to which is added 50 per cent for waste in mining; the estimated original tonnage; and the estimated amount remaining in the ground. The figures given show that the area of the more accessible coal fields of the United States is about 327,000 square miles and that they carry an estimated content available for future use of nearly 2,000 billion tons. This exhibit of the extent of the nation's supply of its most important fuel was timely in connection with the addresses of the President and other speakers at the conference.

The importance of collecting similar data for other minerals is realized, and a beginning has been made in the preparation of quantitative estimates of the nation's reserves of the other mineral fuels and the principal metals. These inventories are especially opportune at this time of unprecedented development of the mineral industry.

WATER RESOURCES.

Need of investigation.—The public interest in the importance of conserving the natural resources of the nation, aroused by the appointment of the Inland Waterways Commission, and more especially by the governors' conference, has emphasized the value of the country's water resources and the necessity for their thorough investigation.

The idea that water is our most valuable resource, as it is the most active agent in changing or modifying or limiting all those other resources which are so necessary to commercial and economic development, is by no means new. Prominent engineers in this country have long recognized it and have advocated the extension of the government investigations of water resources; and in European countries centuries of experience have demonstrated that water investigations are necessary to a continuance of prosperity. If the United States were to provide for the prosecution of this work on a scale of thoroughness equal to that of the Republic of Switzerland, for example, it would appropriate $11,000,000 annually, a sum 110 times greater than the present annual appropriation for similar work in this country.

Legislative provision for the investigation of water resources is one of the most important of those necessary acts that may be called anticipatory. The immediate value or application of the results of such investigations is outweighed by their prospective value—a value which will become greater as the passage of years brings increased population and consequent enlarged demands on these resources.

Obviously, if water resources are to be utilized, the first step must be to determine their extent and character. A brief statement of a few of the industrial and social problems of the present day in which the utilization of water is the controlling factor is given in the following paragraphs.

Floods.—The average annual damage by floods in the United States has never been accurately determined, but such investigations as have been made indicate that the loss must be at least $100,000,000 annually. It appears that, in many parts of the United States, the proper expenditure of an amount equal to one year's flood loss would prevent future floods; in other parts of the country the cost would probably equal the flood losses of two or more years, but in every

locality prevention could be accomplished by an expenditure equivalent to the losses from the floods of a few years.

In few flood regions, however, could this result be accomplished except under federal action. Most of the rivers are interstate. Their basins were defined many thousands of years before state boundaries were conceived. The proper treatment of the flood question must therefore follow the limits imposed by nature rather than the artificial lines defining the sovereignty of the various States. Prevention of floods is purely an engineering problem, and the engineers who have thoroughly investigated it realize the necessity for federal regulation.

On another feature of this subject the engineering profession is also agreed; namely, that whatever means may be finally adopted to prevent this great devastation, the results of investigations of rivers must be available to show their habits, flows, seasonal changes, and eccentricities; and, moreover, such investigations must extend over a period of years and be practically completed before remedial measures can be applied.

Inland navigation.—Several hundred million dollars have been expended by the Government for river improvement, and it is probable that as much, if not more, must be expended during the next decade. No one will contend that all past expenditures have been wise, as each year brings new knowledge which changes ideas and renders old practice inadvisable. To quote from the address of the President before the conference of governors at the White House on May 13, 1908:

> Our natural waterways are not gone, but they have been so injured by neglect, by the division of responsibility and utter lack of system in dealing with them, that there is less navigation on them now than there was fifty years ago.

Whatever may be the process by which inland navigation shall be rehabilitated, whatever may be the system under which the United States shall make its improvements, all engineers agree that thorough investigation of rivers is absolutely necessary to the final solution of the problem.

Irrigation.—The United States is spending $40,000,000 in the construction of irrigation systems. The great factor that will determine the success or failure of this investment is the water supply. It is necessary to deliver to irrigated areas certain amounts of water, and an irrigation project constructed in any region in which there is not sufficient water must fail. A trip through the arid West will disclose thousands of acres in which irrigation systems constructed by private enterprise have failed for lack of proper investigation before construction.

Whether or not there is water sufficient for any irrigation project can not be determined by mere inspection or by measurements cover-

ing a short period of time. When the reclamation act was passed, in 1902, it was possible for the Government to proceed at once with certain projects because the Geological Survey had on file the results of stream measurements showing that sufficient water was available for these projects. Various reclamation projects based on such exact information have been constructed or are under way, and money is being returned to the Treasury under the terms of the reclamation act. This returned money will be available for the construction of other projects, and information concerning the amount of water available for these will be as necessary as it was for the earlier work. The Reclamation Service has no legal power to make general investigations of stream flow, and obviously it would be unjust to charge the cost of general investigations over all the arid West against specific projects. In other words, the continued investigation of the water resources of the arid country will safeguard $40,000,000 of government expenditure.

Drainage of wet lands.—More than 80,000,000 acres of the best agricultural lands in the United States are unproductive because they need drainage. The lands are so widespread that their drainage is being agitated as a national issue, for many believe that these wet lands should be reclaimed under federal authority, as are the arid lands of the West. To the success of this work the investigation of water resources, as well as accurate topographic mapping, is as necessary as it is to the success of irrigation enterprises.

If the sentiment in the United States shall finally become so strong that the Government will be obliged to undertake the work of wet-land reclamation, the basic data should be in hand in order that the work may be promptly and properly performed.

Water power.—More than half of the present coal consumption in the United States is used for the generation of power. The substitution of water power for this fuel power would result not only in saving the coal but in great financial saving to the people of the whole country, because water power is already cheaper than that derived from fuel. With impoverishment of the coal resources water power will become increasingly important and the investigation of these power resources will be more urgently demanded.

The United States Government is at the present time the largest owner of potential water powers, and investigation of these powers available in the public lands is a matter of public duty. In the absence of specific information concerning its value, a water power may be easily acquired, and water-power rights have thus gone from the control of the Government for a fraction of their real value, not for useful development, but for speculative holding, which involves keeping them for long periods in a nonproductive state. Enormous water powers outside of the public domain are being procured at extremely

low valuations, and although the development of these powers will undoubtedly be of ultimate benefit to the people at large, their extent and value should be matters of public record.

TECHNOLOGIC INVESTIGATIONS.

The technologic investigations conducted by the Geological Survey during the last year have been planned to contribute to the conservation of the nation's mineral resources. In the investigations relating to the mineral fuels attention has been given not only to the waste in mining but more especially to the much greater loss in utilization. The promotion of increased efficiency has been sought by steam-engineering investigations, gas-producer and briquetting tests, and smoke-abatement experiments. The extent of mine waste has been studied and plans have been perfected for commencing an adequate investigation of mine explosions and for conducting tests of explosives—a line of practical research that is expected to decrease in some degree the present excessive loss of life in the mines as well as to diminish the waste of coal in mining.

The structural-materials investigations have included inquiries into the nature, extent, and distribution of materials needed for use by the Government in its building and construction work (the cost of which now aggregates about $40,000,000 annually), in order to meet the urgent needs for accurate data concerning the strength and the fire-resisting and other properties of concrete, clay products, stone, and other building materials, with the view not only to make construction secure but to lessen waste due to use of materials in excessive amounts and with poor protection against fire.

MAP PUBLICATION.

The increasing popularity among private citizens of the topographic maps issued by the Survey is being paralleled by the growing appreciation of the maps by the government departments. Of the 40,000 maps distributed to the departments last year for official use, more than 5,000 were delivered to the Forest Service and 3,600 to the War Department. The increased use of the maps by the Forest Service, the War College, and the service schools is especially noteworthy. They are used in administering the national forests, in planning military operations, and as bases for military maps, and the text-books in use at West Point recognize them as the mother maps to which the army officers can add detailed data of purely military value.

The efficiency of the engraving and printing force of the Survey is appreciated by other branches of the government service, and during the last year there has been a notable increase in the amount of map printing done by the Survey, not only for the other bureaus of the

Interior Department, but especially for the Forest Service and the Public Printer. Large contracts have been awarded to the Survey on bids made in competition with outside contractors. Contracts of this character performed during the year for other bureaus and offices aggregated 30 per cent of the work of the engraving division.

ORGANIZATION.

Another line of investigation was placed under the administration of the Geological Survey in May by authority of the Secretary of the Interior, upon the appropriation by Congress of $150,000 for conducting investigations of the causes of mine explosions, with a view to increasing safety in mining. The division of mine accidents was created May 22, 1908, and made a part of the technologic branch. The organization of this new work was immediately begun and authority was obtained from the Secretary of War for the use of a part of the old arsenal tract in Pittsburg as an explosive station. Before the end of the fiscal year plans had been perfected, contracts awarded, and progress made in equipping for this use certain of the government buildings at Pittsburg. It is proposed to concentrate, for the present, the other work of the technologic branch at this testing station.

In August, 1907, David T. Day, who for more than twenty years had been in charge of the division of mineral resources, was, at his own request, relieved of administrative charge of the division in order that he might take up special studies of the character of American petroleums and the statistics of petroleum production. Edward W. Parker was promoted to become the administrative chief of the division, with the title "statistician in charge."

The reorganization of the topographic branch, begun in March, 1907, was completed January 18, 1908, by the promotion of Robert B. Marshall, geographer, to the position of chief geographer.

Other changes in the personnel were the promotion of George M. Wood, assistant editor, to the vacancy caused by the resignation of P. C. Warman as editor, Mr. Warman continuing in the book publication division, and the designation of Miss Julia L. V. McCord as acting librarian on the resignation of Fred B. Weeks, who had been librarian since 1902.

The establishment of local offices in the West for at least a portion of the year has proved to be of advantage, not only in insuring better administration of the field work and in facilitating the discharge of official business, but in encouraging closer relations between the Survey and the public. This has been especially advantageous in the work of the water-resources and topographic branches, as it is important to provide for the engineers in any district every possible opportunity to be informed of and to profit by the investigations of the Survey and to assist the Survey in meeting local needs.

WORK OF THE YEAR.

PUBLICATIONS.

The Survey is a bureau of investigation and publication. Its relation to the public requires that the results of the scientific investigations intrusted to it be presented in the form best adapted to serve the purpose of publicity and that these reports of investigations be distributed with the greatest possible care and expedition. The current publications therefore furnish an important index to the nature and value of the work of the Survey. Summaries of the book publications issued during the last fiscal year follow:

Twenty-Eighth Annual Report of the Director of the United States Geological Survey to the Secretary of the Interior, for the fiscal year ended June 30, 1907. iv, 80 pp., 1 pl.

A summary account of the work of the year, by branches and divisions, with a map showing area covered by topographic surveys.

Monograph XLIX. The Ceratopsia, by John B. Hatcher; based on preliminary studies by Othniel C. Marsh; edited and completed by Richard S. Lull. xxx, 300 pp., 51 pls., 125 text figures.

Descriptions of the remains of an order of Cretaceous Reptilia found in Montana, Wyoming, and Colorado, with foreword and sketch of the life and work of Mr. Hatcher by Henry Fairfield Osborn, and prefaces by the author and the editor. Part I, by J. B. Hatcher, comprises the history of discovery of the remains, the classification, the osteology, and the systematic description; Part II, by R. S. Lull, is devoted to the phylogeny, taxonomy, distribution, habits, and environment of the Ceratopsia.

Professional Paper 53. Geology and water resources of the Bighorn Basin, Wyoming, by Cassius A. Fisher. vi, 72 pp., 16 pls., 1 text figure.

A description of the topography and stratigraphy of the region, with brief accounts of the structure and geologic history and sections on the water resources and mineral resources, geologic map and sections, diagram representing the structure of the basin, map showing irrigated and irrigable lands, and half-tone plates illustrating the geologic features of the country.

Professional Paper 56. Geography and geology of a portion of southwestern Wyoming, with special reference to coal and oil, by A. C. Veatch. vi, 178 pp., 26 pls., 9 text figures.

A historical review of exploration in the region (with bibliography); descriptions of the geography, stratigraphy, and structure; and an account of the economic resources, principally coal and oil. Three large pocket maps and a sheet of cross sections show the geology and the land subdivisions, and a large map with the text indicates irrigated and irrigable lands.

Bulletin 304. Oil and gas fields of Greene County, Pa., by Ralph W. Stone and Frederick G. Clapp. 110 pp., 3 pls., 7 text figures.

An account of the geology of southwestern Pennsylvania, with descriptions of the oil and gas sands and fields, brief judgments as to the limits of the productive territory, and table of well records. The large pocket map (scale 1 mile to the inch) shows the location of oil and gas wells and of dry wells and the outcrops of important coals.

Bulletin 309. The Santa Clara Valley, Puente Hills, and Los Angeles oil districts, southern California, by George H. Eldridge and Ralph Arnold. xi, 266 pp., 41 pls., 17 text figures.

Descriptions by Mr. Eldridge of the geologic features of the districts and detailed descriptions of the oil fields, with accounts of the oil wells and a bibliography of southern California oils, followed by a report on the physical and chemical properties of southern California oils and descriptions of the fossils of the oil-bearing formations, by Mr. Arnold. The illustrations include geologic maps of the oil fields, geologic sections, and views of fossils.

Bulletin 311. The green schists and associated granites and porphyries of Rhode Island, by Benjamin K. Emerson and Joseph H. Perry. 74 pp., 2 pls., 6 text figures.

A petrographic description of the stratified and igneous rocks, in order of geologic age, with map of the crystalline rocks in the vicinity of Providence and Narragansett Bay.

Bulletin 313. The granites of Maine, by T. Nelson Dale, with an introduction by George Otis Smith; prepared in cooperation with the Maine State Survey Commission. 202 pp., 14 pls., 39 text figures.

The introduction describes the distribution and geologic relations of the granite and states the scope of the report. Part I consists of a scientific discussion of granites proper and of the so-called black granites. Part II includes economic and technologic descriptions of Maine granites and quarries, statistics, bibliography, and glossary. A pocket map shows the distribution of granite in Maine, and illustrations show features of structure at various quarries.

Bulletin 316. Contributions to economic geology, 1906: Part II, Coal, lignite, and peat; Marius R. Campbell, geologist in charge. 543 pp., 23 pls., 6 text figures.

An introduction by M. R. Campbell summarizes the work done in the coal fields of the United States during the year and contains a brief note on technologic and laboratory work on coals. The remainder of the bulletin consists of the following papers:

Coals of the Clarion quadrangle, Clarion County, Pa., by E. F. Lines.

Coal resources of Johnstown (Pa.) and vicinity, by W. C. Phalen.

The Elkhorn (Ky.) coal field, by R. W. Stone.

The Russell Fork (Va.) coal field, by R. W. Stone.

Coal mining at Dante, Va., by R. W. Stone.

The northern part of the Cahaba (Ala.) coal field, by Charles Butts.

Coal investigation in the Saline-Gallatin (Ill.) field and the adjoining area, by F. W. De Wolf.

The Arkansas coal field, by A. J. Collier.

The Great Falls (Mont.) coal field, by C. A. Fisher.

Coals of Carbon County, Mont., by N. H. Darton.

The coal fields of parts of Dawson, Rosebud, and Custer counties, Mont., by A. G. Leonard.

Coal fields in a portion of central Uinta County, Wyo., by A. R. Schultz.

The Lander (Wyo.) coal field, by E. G. Woodruff.

Coal fields of east-central Carbon County, Wyo., by A. C. Veatch.

Coal of Laramie Basin (Wyo.), by C. E. Siebenthal.

Coal fields of the Danforth Hills and Grand Hogback, in northwestern Colorado, by H. S. Gale.

The Book Cliffs coal field between Grand River, Colorado, and Sunnyside, Utah, by G. B. Richardson.

The Durango (Colo.) coal district, by J. A. Taff.

The Pleasant Valley coal district, Carbon and Emery counties, Utah, by J. A. Taff.

The Iron County (Utah) coal field, by W. T. Lee.

A reconnaissance survey of the western part of the Durango-Gallup coal field of Colorado and New Mexico, by M. K. Shaler.

The Una del Gato coal field, Sandoval County, N. Mex., by M. R. Campbell.

Coal in the vicinity of Fort Stanton Reservation, Lincoln County, N. Mex., by M. R. Campbell.

Coal of Stone Canyon, Monterey County, Cal., by M. R. Campbell.

The present status of the producer-gas power plant in the United States, by R. H. Fernald.

Condition of the coal-briquetting industry of the United States, by E. W. Parker.

The importance of uniform and systematic coal-mine sampling, by J. S. Burrows.

List of Survey papers on coal, lignite, and peat, by W. T. Lee and J. M. Nickles.

Bulletin 317. Preliminary report on the Santa Maria oil district, Santa Barbara County, Cal., by Ralph Arnold and Robert Anderson. 69 pp., 2 pls., 1 text figure.

A brief abstract of the report issued later as Bulletin 322, issued to meet urgent demand for early publication of available facts.

Bulletin 318. Geology of oil and gas fields in Steubenville, Burgettstown, and Claysville quadrangles, Ohio, West Virginia, and Pennsylvania, by W. T. Griswold and M. J. Munn. 196 pp., 13 pls.

Part I includes a theoretical discussion of the occurrence of petroleum and natural gas, a statement of the method of investigation, and descriptions of the general geology. Part II consists of detailed descriptions of the stratigraphy, with well logs or sections. Maps show the location of oil and gas wells and the depth of the oil sands from the surface.

Bulletin 319. Summary of the controlling factors of artesian flows, by Myron L. Fuller. 44 pp., 7 pls., 17 text figures.

A sketch of ground-water conditions, including descriptions of reservoirs and sources of water, and discussions of the nature of artesian circulation and the requisites of artesian flows, with plates and diagrams showing artesian reservoirs and conditions of flow.

Bulletin 320. The Downtown district of Leadville, Colo., by Samuel F. Emmons and John D. Irving. 75 pp., 7 pls., 5 text figures.

A brief description of the general geology, a statement of the economic development and present conditions, a sketch of the faults and the porphyry sheets, and an account of the ores with a discussion of their genesis. The illustrations consist of a geologic map of the district, with cross sections, and text figures showing mine plans, sections, and workings.

Bulletin 321. Geology and oil resources of the Summerland district, Santa Barbara County, Cal., by Ralph Arnold. 93 pp., 17 pls., 3 text figures.

A record of previous publications on the region, a sketch of the topography, descriptions and tentative correlation of the geologic formations, and notes on the wells, with logs or sections, conclusions as to future development, a statement of the physical and chemical properties and composition of the oil, and

a section on technology and production. The illustrations comprise geologic and structural maps, geologic sections, and half-tone reproductions of photographs, including views of fossils of the various formations.

Bulletin 322. Geology and oil resources of the Santa Maria oil district, Santa Barbara County, Cal., by Ralph Arnold and Robert Anderson. 161 pp., 26 pls.

An account of the previous knowledge of the geology of the region, a sketch of the geography and topography, descriptions of the rocks, the geologic history, and the structure and conditions affecting the presence of oil, with detailed notes on the developed territory and a section on the oil, including accounts of its origin, physical and chemical properties, and the associated hydrocarbons, and a brief report on the technology of production and utilization. The illustrations consist of maps and half-tone views.

Bulletin 323. Experimental work conducted in the chemical laboratory of the United States fuel-testing plant at St. Louis, Mo., January 1, 1905, to July 31, 1906, by N. W. Lord. 49 pp.

A report on investigations of the chemical and physical properties of coal, including results of tests for moisture, showing changes in moisture content under various conditions, determinations of specific gravity, impurities in coal as related to specific gravity and fineness, adaptability of different coals to improvement by washing, and content of volatile matter in coals and lignites.

Bulletin 324. The San Francisco earthquake and fire of April 18, 1906, and their effects on structures and structural materials. Reports by Grove K. Gilbert, Richard L. Humphrey, John S. Sewell, and Frank Soulé, with preface by Joseph A. Holmes. xii, 170 pp., 57 pls., 2 text figures.

The preface states the origin and nature of the investigation. Mr. Gilbert's report considers the earthquake as a natural phenomenon, with respect to its origin and effect on the earth's crust. Mr. Humphrey's, Mr. Sewell's, and Mr. Soulé's reports discuss the effect of the earthquake and fire on structures and structural materials. The illustrations include maps showing the course of the fault or line of earth slippage and the location and extent of the burned district, and half-tone reproductions of photographs exhibiting the nature and extent of the effects of the earthquake and fire on various structures.

Bulletin 325. A study of 400 steaming tests made at the fuel-testing plant, St. Louis, Mo., in 1904, 1905, and 1906, by Lester P. Breckenridge. 196 pp., 76 text figures.

A report on a series of tests made under two water-tube boilers with a hand-fired furnace to determine the relative value of various coals for steaming purposes. The results of the tests are expressed by numerous diagrams, tables, and mathematical equations. The general conclusions and commercial considerations are stated in a few pages at the end of the report, and are followed by a bibliography and a glossary.

Bulletin 326. The Arkansas coal field, by Arthur J. Collier; with reports on the paleontology by David White and G. H. Girty. vi, 158 pp., 6 pls., 29 text figures.

A brief account of the geography and stratigraphy of the field, reports on fossil plants and marine invertebrate fossils, descriptions of geologic structure, coal beds, and conditions of mining development, with classification and analyses of the coals, a section on methods of mining, a table of mines, openings, and exposures, and geologic and economic maps and sections.

Bulletin 327. Geologic reconnaissance in the Matanuska and Talkeetna basins, Alaska, by Sidney Paige and Adolph Knopf. 71 pp., 4 pls., 4 text figures.

A sketch of the geography and geology of the region and a description of the deposits of coal, gold, and copper, with topographic and geologic maps and sections and half-tone views.

Bulletin 328. The gold placers of parts of Seward Peninsula, Alaska, including the Nome, Council, Kougarok, Port Clarence, and Goodhope precincts, by Arthur J. Collier, Frank L. Hess, Philip S. Smith, and Alfred H. Brooks. 343 pp., 11 pls., 19 text figures.

A preface, by A. H. Brooks, is followed by reports with titles and authorship as indicated below.

Development of the mining industry, by A. H. Brooks.
Geography and geology, by A. J. Collier.
Outline of economic geology, by A. H. Brooks.
Description of placers, by A. J. Collier and F. L. Hess.
The Bluff region, by A. H. Brooks.
The Kougarok region, by A. H. Brooks.
Geology and mineral resources of Iron Creek, by P. S. Smith.

The illustrations include sketch maps and sections and large pocket maps showing topography, geology, and location of placers.

Bulletin 329. Organization, equipment, and operation of the structural-materials testing laboratories at St. Louis, Mo., by Richard L. Humphrey; with preface by Joseph A. Holmes. xi, 84 pp., 25 pls., 9 text figures.

A brief history of the establishment of the laboratories, with statement of personnel, description of the buildings and equipment, and sketch of work done and projected, illustrated by views and diagrams showing apparatus employed and results of tests.

Bulletin 330. The data of geochemistry, by Frank W. Clarke. 716 pp.

A manual of geologic chemistry, including chapters on the nature, distribution, and relative abundance of the chemical elements, the composition of the atmosphere and of volcanic gases and sublimates, the mineral content of surface and underground waters, the nature of saline residues, the molten magma of the earth's interior, the rock-forming minerals, the composition of igneous, sedimentary, and metamorphic rocks, rock metamorphism and decomposition, metallic ores, natural hydrocarbons, coal, lignite, and peat.

Bulletin 331. Portland cement mortars and their constituent materials; results of tests made at the structural-materials testing laboratories, Forest Park, St. Louis, Mo., 1905–1907, by Richard L. Humphrey and William Jordan, jr. vii, 130 pp., 20 pls., 22 text figures.

Records, tables, diagrams, and views showing nature and results of 25,000 tests of cements, sands, gravels, crushed stone, and other materials.

Bulletin 332. Report of the United States fuel-testing plant at St. Louis, Mo., January 1, 1906, to June 30, 1907. Joseph A. Holmes, in charge. 299 pp.

An introduction, by J. A. Holmes, states briefly the work done and projected. The body of the report consists of the following papers:

Field work, by E. W. Parker and J. S. Burrows.
Work of the chemical laboratory, by N. W. Lord.
Steaming tests, by L. P. Breckenridge.
Producer-gas tests, by R. H. Fernald.

Washing tests, by G. R. Delamater.
Coking tests, by A. W. Belden.
Cupola tests on coke, by Richard Moldenke.
Briquetting tests, by C. T. Malcolmson.
Results of tests by States.

Bulletin 333. Coal-mine accidents: Their causes and prevention. A preliminary statistical report, by Clarence Hall and Walter O. Snelling, with introduction by Joseph A. Holmes. 21 pp.

Tables showing the number of men killed by accidents in coal mines in the United States during many years, the number of men killed in various other countries for each thousand employed, and the number killed for each million tons of coal mined, with statement of causes of accidents and suggestions as to their prevention.

Bulletin 334. The burning of coal without smoke in boiler plants. A preliminary report, by D. T. Randall. 26 pp.

A sketch of prevailing conditions in the United States as to smoke from furnaces, and of city ordinances for its prevention, and a statement of the causes of smoke and of methods for preventing it, with a bibliography.

Bulletin 335. Geology and mineral resources of the Controller Bay region, Alaska, by G. C. Martin. 141 pp., 10 pls., 2 text figures.

An account of surveys made in the region, of the commercial developments, the general character of the country, climate, vegetation, settlements, harbors, and railway routes; a description of the land forms, the geology, and the coal and petroleum deposits, with results of analyses and tests and prospects of development. The illustrations include maps showing topography, geology, and location of coal beds and oil wells and seepages.

Bulletin 336. Washing and coking tests of coal and cupola tests of coke, conducted by the United States fuel-testing plant at St. Louis, Mo., January 1, 1905, to June 30, 1907, by Richard Moldenke, A. W. Belden, and G. R. Delamater, with introduction by J. A. Holmes. 76 pp.

Tables showing the results of 65 washing tests, 192 coking tests of 102 coals, and 172 cupola tests, with statement of equipment and methods of operation.

Bulletin 337. The Fairbanks and Rampart quadrangles, Yukon-Tanana region, Alaska, by L. M. Prindle; with a section on the Rampart placers by F. L. Hess, and a paper on the water supply of the Fairbanks region by C. C. Covert. 102 pp., 5 pls., 3 text figures.

A sketch of the geography, climate, and vegetation, descriptions of the rocks and the economic geology, an account of the hydrography of part of the region and of the placer diggings near Rampart, with maps showing the topography, geology, and timber.

Bulletin 339. The purchase of coal under government and commercial specifications on the basis of its heating value, with analyses of coal delivered under government contracts, by D. T. Randall. 27 pp.

A statement of the advantages of definite specifications in the purchase of coal, of the requirements for proper combustion, and of the valuable constituents of coals, with reprint of specifications used by the United States Government in coal purchases, notes on methods of sampling and testing, analyses of coals delivered to the Government, and a brief bibliography.

Bulletin 342. Results of spirit leveling in California, 1896 to 1907, inclusive, by S. S. Gannett and D. H. Baldwin. 172 pp.

Descriptions and elevations of bench marks in 42 counties, furnishing vertical control for one-third of the State, the engineering data being grouped under the headings "precise leveling" and "primary leveling," according to the degree of refinement in the methods employed. A compilation of the results of field work by several topographers.

Bulletin 343. Binders for coal briquets: Investigations made at the fuel-testing plant, St. Louis, Mo., by James E. Mills. 56 pp., 1 text figure.

A discussion of the characteristics of good briquets and of the conditions governing the use of binders, and an account of laboratory investigations of various binders, of experiments in briquetting without binders, and of results of tests in briquetting coals, with a brief bibliography.

Bulletin 344. The strength of concrete beams: Results of tests of 108 beams (first series) made at the structural-materials testing laboratories, by Richard L. Humphrey. 59 pp., 1 pl., 13 text figures.

A note on the scope of the investigation and a summary of its results, followed by statements of tests of constituent materials, methods of preparing test pieces and of testing, and diagrams and tables showing in detail the results of the tests.

Water-Supply Paper 195. Underground waters of Missouri; their geology and utilization, by Edward M. Shepard. x, 224 pp., 6 pls., 6 text figures.

A statement of the requisite conditions for flowing wells, descriptions of the topography and geology, a brief sketch of the geologic history, a detailed report of the underground waters, by districts and counties, a section on city water supplies, with statistical tables and analyses, and notes on mineral and blowing well. The illustrations include a geologic and artesian well map and geologic cross sections.

Water-Supply Paper 197. Water resources of Georgia, by B. M. Hall and M. R. Hall. 342 pp., 1 pl.

Sketches of the topography and geology and of the uses of water in the State, descriptions of the river basins, tables showing gage heights and flow of the streams, tabulated results of river surveys giving elevations of the water surface of streams at certain points, and detailed notes on water powers.

Water-Supply Paper 198. Water resources of the Kennebec River basin, Maine, by H. K. Barrows; with a section on the quality of Kennebec River water, by George C. Whipple. vi, 235 pp., 7 pls., 17 text figures.

Brief descriptions of the geology, drainage, forest conditions, population, industries, and transportation facilities, sections on precipitation, snow storage and evaporation, detailed accounts of stream flow, floods, water powers and water storage, and the results of examinations of the quality of the water, a section on the typhoid fever epidemic of 1902–3, and a gazetteer of the rivers, lakes, and ponds in the basin.

Water-Supply Paper 199. Underground water in Sanpete and central Sevier valleys, Utah, by G. B. Richardson. 63 pp., 6 pls., 5 text figures.

A sketch of the topography and geology of the region and of the sources, distribution, and quality of the underground water, a statement of methods adopted and suggestions offered for its recovery, and detailed descriptions, by localities, of wells and water resources, with tables giving data concerning wells and springs.

Water-Supply Paper 201. Surface water supply of New England, 1906 (Atlantic coast of New England drainage); H. K. Barrows, district hydrographer. 120 pp., 5 pls., 2 text figures.

Water-Supply Paper 202. Surface water supply of Hudson, Passaic, Raritan, and Delaware river drainages, 1906; H. K. Barrows and N. C. Grover, district hydrographers. iv, 77 pp., 2 pls., 2 text figures.

Water-Supply Paper 203. Surface water supply of Middle Atlantic States, 1906 (Susquehanna, Gunpowder, Patapsco, Potomac, James, Roanoke, and Yadkin river drainages); N. C. Grover, district hydrographer. iv, 100 pp., 4 pls., 2 text figures.

Water-Supply Paper 204. Surface water supply of Southern Atlantic and Eastern Gulf States, 1906 (Santee, Savannah, Ogeechee, and Altamaha rivers and eastern Gulf of Mexico drainages); M. R. Hall, district hydrographer. v, 110 pp., 5 pls., 2 text figures.

Water-Supply Paper 205. Surface water supply of Ohio and lower eastern Mississippi river drainages, 1906; M. R. Hall, N. C. Grover, and A. H. Horton, district hydrographers. 123 pp., 3 pls., 2 text figures.

Water-Supply Paper 206. Surface water supply of Great Lakes and St. Lawrence River drainages, 1906; H. K. Barrows, A. H. Horton, district hydrographers. vi, 98 pp., 3 pls., 2 text figures.

Water-Supply Paper 207. Surface water supply of upper Mississippi River and Hudson Bay drainages, 1906; A. H. Horton and Robert Follansbee, district hydrographers. v, 94 pp., 4 pls., 2 text figures.

Water-Supply Paper 208. Surface water supply of Missouri River drainage, 1906; Robert Follansbee, R. I. Meeker, and J. E. Stewart, district hydrographers. vi, 190 pp., 5 pls., 2 text figures.

Water-Supply Paper 209. Surface water supply of lower western Mississippi River drainage, 1906; R. I. Meeker and J. M. Giles, district hydrographers. iv, 79 pp., 2 pls., 2 text figures.

Water-Supply Paper 210. Surface water supply of western Gulf of Mexico and Rio Grande drainages, 1906; T. U. Taylor and W. A. Lamb, district hydrographers. 114 pp., 2 pls., 2 text figures.

Water-Supply Paper 211. Surface water supply of Colorado River drainage above Yuma, 1906; R. I. Meeker, H. S. Reed, district hydrographers. 149 pp., 2 pls., 2 text figures.

Water-Supply Paper 212. Surface water supply of the Great Basin drainage, 1906; E. C. La Rue, Thomas Grieve, jr., and Henry Thurtell, district hydrographers. iv, 98 pp., 2 pls., 2 text figures.

Water-Supply Paper 213. Surface water supply of California, 1906; with a section on ground-water levels in southern California (Great Basin and Pacific Ocean drainages in California and lower Colorado River drainage); W. B. Clapp, district hydrographer. In cooperation with California state board of examiners. 219 pp., 4 pls., 2 text figures.

Water-Supply Paper 214. Surface water supply of the north Pacific coast drainage, 1906; J. C. Stevens, Robert Follansbee, and E. C. La Rue, district hydrographers. Work in Oregon done in cooperation with the state engineer. vi, 208 pp., 3 pls., 2 text figures.

Fourteen papers comprising the results of stream measurements in the United States during the calendar year 1906, continuing the series published in previous years under the title "Report of progress of stream measurements." These papers give gage-height records, results of current-meter measurements, rating tables, and estimates of monthly discharge for stations maintained on streams in many of the important drainage basins of the country.

Water-Supply Paper 215. Geology and water resources of a portion of the Missouri River valley in northeastern Nebraska, by G. E. Condra. 59 pp., 11 pls.

Descriptions of the stratigraphy, structure, and rocks, and of the mineral and water resources, with geologic map and sections and map showing underground water conditions.

Water-Supply Paper 216. Geology and water resources of the Republican River valley and adjacent areas, Nebraska, by G. E. Condra. 71 pp., 13 pls., 3 text figures.

Notes on the topography, drainage, and climate, descriptions of the geology and mineral resources, and detailed accounts of the surface and underground waters, of the water supply by counties, and of the water power and agricultural resources, with geologic maps and sections and half-tone illustrations.

Water-Supply Paper 217. Water resources of Beaver Valley, Utah, by Willis T. Lee. 57 pp., 1 pl., 3 text figures.

Sketch of the geography and geology, records of rainfall and stream measurements, and an account of the springs and wells, with well sections and statistics of wells and springs, including assays and chemical determinations of content of waters and notes on possibilities of development.

Water-Supply Paper 218. Water-supply investigations in Alaska, 1906–1907, Nome and Kougarok regions, Seward Peninsula; Fairbanks district, Yukon-Tanana region, by Fred F. Henshaw and C. C. Covert. 156 pp., 12 pls., 2 text figures.

Descriptions of the areas and of the conditions affecting water supply, lists of gaging stations, tables showing stream flow, and meteorological records, with maps indicating the location of gaging and rainfall stations.

Mineral Resources of the United States, calendar year 1906. 1,307 pp., 2 text figures.

Statistics of production of mineral substances in the United States, including an account of the chief features of mining progress, and comparisons of past and present conditions. This report is a consolidation of 45 separate chapters, each treating of a separate mining industry, published in pamphlet form in advance of the publication of the volume.

Advance chapters from "Mineral Resources of the United States, calendar year 1907," as follows: The production of bauxite and aluminum, by W. C. Phalen. 15 pp. The cement industry in the United States in 1907, by Edwin C. Eckel. 19 pp. The production of monazite and zircon in 1907, by Douglas B. Sterrett. 12 pp. The production of phosphate rock in 1907, by F. B. Van Horn. 9 pp. The production of asbestos in 1907, by J. S. Diller. 14 pp.

Statistics of production of the minerals, chief features of mining progress, and comparisons of past and present conditions, as in previously published reports.

Geologic folio 151. Description of the Roan Mountain quadrangle, comprising 963 square miles in Washington, Sullivan, Carter, and Unicoi counties, Tenn., and Yancey and Mitchell counties, N. C.; by Arthur Keith. 11 folio pages of text, 4 maps showing topography, geology, and mineral resources, a sheet of columnar and structure sections, and 2 pages of reproductions of photographs illustrating physiography and geology.

Geologic folio 152. Description of the Patuxent quadrangle, comprising 931.5 square miles, of which 24 square miles are in the District of Columbia and the remainder in Maryland. Prepared under the supervision of William Bullock Clark, state geologist of Maryland, by George B. Shattuck, Benjamin L. Miller, and Arthur Bibbins. 12 folio pages of text, 3 maps, and 1 columnar section.

Geologic folio 153. Description of the Ouray quadrangle, an area 234.87 square miles in extent in southwestern Colorado, with the mining town of Ouray in the southwest part of the quadrangle; geography and general geology by Whitman Cross and Ernest Howe; economic geology by J. D. Irving and Whitman Cross. 20 folio pages of text, 3 maps, 1 columnar section sheet, and 1 sheet of illustrations exhibiting physiographic features.

Geologic folio 154. Description of the Winslow quadrangle, comprising 940 square miles of the Ozark region of western Arkansas and about 29 square miles of Oklahoma; by A. H. Purdue. 6 folio pages of text, 2 maps showing topography and areal geology, and 1 sheet of columnar sections.

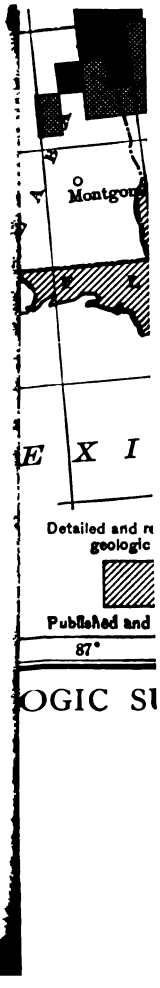
Geologic folio 155. Description of the Ann Arbor quadrangle, embracing an area 884.85 square miles in extent in the southeastern part of the Southern Peninsula of Michigan, the city of Ann Arbor being near its geographic center. General geology, marl deposits, and mineral waters described by I. C. Russell; topography and drainage, Quaternary geology, and water resources by Frank Leverett; peat deposits by Charles A. Davis; Paleozoic history by E. M. Kindle. In the preparation of this folio the Michigan State Geological Survey rendered much assistance. 15 folio pages of text and 3 maps representing topography, geology, and artesian waters.

Geologic folio 156. Description of the Elk Point quadrangle, comprising about 878 square miles in the Missouri Valley, on the western slope of the Mississippi basin, mainly in Union and Clay counties, S. Dak., but including also portions of Dixon and Dakota counties, Nebr., and Plymouth and Sioux counties, Iowa; by J. E. Todd. 8 folio pages of text and 3 maps of topography, geology, and artesian waters.

Geologic folio 157. Description of the Passaic quadrangle, comprising an area of about 905 square miles, the greater part of which lies in New Jersey, although Staten Island, the west end of Long Island, the south end of Manhattan Island, and several smaller islands belonging to New York are also included. The New York area is all in New York City; the New Jersey area includes the counties of Union and Essex and portions of Hudson, Passaic, Bergen, Morris, Middlesex, and Somerset counties; surveyed in cooperation with the State of New Jersey; by N. H. Darton, W. S. Bayley, R. D. Salisbury, and H. B. Kümmel. 27 folio pages of text, 3 maps—topography, areal geology, and surficial geology—a sheet of structure sections, and a sheet of illustrations exhibiting geologic features.

Geologic folio 158. Description of the Rockland quadrangle, comprising about 215 square miles (of which only about two-thirds is land) on the western side of Penobscot Bay, Maine; surveyed in cooperation with the State of Maine by Edson S. Bastin, under the supervision of George Otis Smith. 15 folio pages of text, 4 maps—topography, surficial geology, areal geology, and economic geology—and 1 sheet of structure sections,

Geologic folio 159. Description of the Independence quadrangle, an area 950 square miles in extent, located near the middle of the well-known Kansas-Oklahoma oil and gas field, of which it forms an important part; by F. C. Schrader. 7 folio pages of text; 3 maps, showing topography, areal geology, and structural and economic geology; and 1 sheet of structure sections; also sheet showing names that have been applied to the geologic formations in this region in various publications issued since 1866.



OGIC SI

FIELD WORK BY THE DIRECTOR.

During the field season of 1907 the Director visited geologic, topographic, and hydrographic parties in California, coal-land classification parties in Wyoming, and the testing plants in Denver, St. Louis, and Norfolk. He also accompanied the Inland Waterways Commission on its Mississippi River trip and attended the public-land, irrigation, and mining congresses at Denver, Sacramento, and Joplin, respectively.

GEOLOGIC BRANCH.

ADMINISTRATION.

The geologic branch consists of four divisions, viz, (1) geology and paleontology, (2) Alaskan mineral resources, (3) mining and mineral resources, and (4) chemical and physical research.

Each division is in charge of an administrative chief, while the cooperation between the divisions and the coordination of the several lines of work are in the hands of the chief geologist, C. Willard Hayes. It is often to the advantage of the Survey to employ the members of one division in the work of another, and the form of the organization readily permits such transfer when exigencies demand it.

PUBLICATIONS.

The publications of the year prepared in the geologic branch included 9 geologic folios, 1 monograph, 2 professional papers, 18 bulletins, and the annual volume on mineral resources. Besides these a large number of papers were, with the permission of the Director, published in scientific journals and in the transactions of scientific societies, and some original matter obtained incidentally during the course of the work and not appropriate for official reports has also been made the subject of unofficial publications. Such publications are ordinarily restatements of results in a more technical form, and are usually prepared by members of the Survey without compensation.

The progress of geologic mapping during the year, as represented in the publications of the Survey, is shown on Pl. I.

DIVISION OF GEOLOGY AND PALEONTOLOGY.

ORGANIZATION.

The scientific force of the division at the beginning of the year consisted of 50 geologists and paleontologists, 45 assistant geologists, and 26 junior geologists. During the year there were 7 resignations and 19 appointments, resulting in a net gain of 12, or a total of 133 at the end of the year. Of this number 85 were continuously employed; 33, carried on the per diem roll, gave only a portion of their time to Survey work; and 22 were not employed during the year. In addition to the above regular force 44 field assistants were employed for a portion of the year.

GEOLOGIC WORK IN EASTERN AND SOUTHEASTERN STATES.

New England.—The State of Maine cooperated in geologic work to the extent of $2,100. The detailed geologic survey of the Eastport 30-minute quadrangle was continued by Edson S. Bastin, assisted by C. L. Breger. Prof. Henry S. Williams cooperated in investigations of Devonian paleontology and stratigraphy.

The detailed mapping of the areal geology of the Frenchman Bay quadrangle was continued by Charles W. Brown, and a study of the hard-rock road materials of Maine was made by Henry Leighton, under the direction of Mr. Bastin. The Office of Public Roads of the United States Department of Agriculture cooperated in the testing of samples and in the publication of the report.

During the winter Prof. H. S. Williams, assisted by C. L. Breger, continued the preparation of a manuscript on the Chapman fauna of Maine. A paper entitled "Revision of the mollusk genus *Pterinea*" was published in April by the United States National Museum preliminary to the publication of this monograph.

Brief studies of some of the molybdenite deposits of Maine were made by Frank L. Hess.

A detailed study of the Branford Light-House Point area, Connecticut, was made under Prof. Herbert E. Gregory's direction by Freeman Ward.

Field work on the Ware and Quinsigamond (Mass.) quadrangles was completed by Prof. B. K. Emerson. The text of the Ware folio is in final form, and that of the Quinsigamond folio is nearly ready. The glacial deposits of these quadrangles have been studied by W. C. Alden, and chapters on the Pleistocene geology for the folios have been prepared by him. Professor Emerson also compiled a general geologic map of the States of Massachusetts and Rhode Island, on the scale of 4 miles to the inch. The map is ready for publication and a brief text which will accompany it is well advanced.

All the granite quarries in Vermont, 79 in number, were visited by T. Nelson Dale, and similar work was begun in Connecticut. Mr. Dale also completed a bulletin on the chief commercial granites of Massachusetts, New Hampshire, and Rhode Island (Bulletin 354) and a bulletin on the granites of Vermont, an abstract of which he has furnished for publication in the report of the state geologist of Vermont for 1908.

Atlantic Coastal Plain.—A geologic study of the Atlantic Coastal Plain is being carried on in cooperation with the official Surveys of the various States concerned. Although the need for such work was long recognized, the plans for it were not perfected until about a year ago, when, in response to an invitation sent out by the Director of the National Survey, the state geologists from the various States came to

Washington and met in conference those members of the federal organization that were most directly interested in the proposed investigation. At this meeting, which was held December 31, 1906, it was decided that a cooperative survey of the geology of the Coastal Plain should be undertaken, with special reference to the underground water resources of the region.

In accordance with the views expressed at the conference a supervising board was formed, with Prof. William Bullock Clark, of Johns Hopkins University, as chairman, the other members being the state geologists of the cooperating States and, from the National Survey, the chiefs of the geologic and water-resources branches, the geologist in charge of the section of paleontology, and the geologist selected to supervise the investigation.

The state geologist of each State has general supervision of the work in his State, and the chief geologist, chief hydrographer, and chief paleontologist of the federal Survey act in their respective official capacities. T. Wayland Vaughan, the geologist selected to supervise the investigation, has charge of the coordination of the work between the different States represented and of the geologic correlations.

Prof. W. B. Clark was in immediate charge of the Coastal Plain district extending from Massachusetts to and including North Carolina. Field operations were continued under his direction during the last fiscal year in New Jersey, Delaware, Maryland, Virginia, and North Carolina. He had the assistance of Messrs. B. L. Miller, E. W. Berry, L. W. Stephenson, M. W. Twitchell, and A. Bibbins and Miss Gardner.

In New Jersey the geology of certain portions of the Philadelphia quadrangle was revised in cooperation with the state geologist of New Jersey, preparatory to the publication of the Philadelphia folio, work on which was completed some years ago.

In Pennsylvania further work was done on the Cretaceous deposits, preparatory to the publication of the Philadelphia folio.

Work in Delaware has been confined largely to reconnaissance surveys in the Wilmington quadrangle. The Cretaceous, Tertiary, and Quaternary formations were provisionally platted as the result of work along the stream channels in the district.

In Maryland a systematic study of the Potomac floras, including the revision of the synonymy, was begun by Mr. Berry.

The work in Virginia consisted of a study of the stratigraphy and a laboratory study of the Tertiary fossils. Particular attention was given to the stratigraphy of the Tertiary formations. The leading divisions recognized in Maryland were found, and their extension across the State was mapped in a preliminary way. Mr. Berry began an exhaustive study of the Potomac floras in conjunction with the

Maryland materials, with the idea of making a complete revision of the synonymy and carefully determining the horizons from which the various forms come.

The North Carolina work was continued by Doctor Clark, in cooperation with Messrs. Miller, Berry, Twitchell, and Stephenson, and Miss Gardner. Extensive collections were made from the Lower Cretaceous beds, and the deposits have been correlated with those of regions farther north. A preliminary map showing the distribution of the several formational units has been been prepared, and also a report on North Carolina Coastal Plain stratigraphy.

T. Wayland Vaughan was in immediate charge of the Coastal Plain district extending from the North Carolina-South Carolina line southward.

In South Carolina, in company with Earle Sloan, state geologist of South Carolina, Mr. Vaughan reviewed the Tertiary stratigraphy of the State, making at numerous localities collections of fossils, which were subsequently studied, in order to establish geologic correlations between South Carolina and adjoining States. L. W. Stephenson spent several weeks in South Carolina for the purpose of correlating the Cretaceous formations of the State with those of the other Coastal Plain States and of determining the Eocene or Cretaceous age of certain beds. Considerable progress was made in the study of the geology of South Carolina, and as a result of the cooperative work Mr. Sloan will soon issue a report on the Coastal Plain formations of that State. This report will be followed by a special report on the underground waters of the State, for which most of the data have already been collected.

An arrangement, contingent on receiving the necessary appropriations, was made with S. W. McCallie, state geologist of Georgia, for the detailed study of the Coastal Plain of Georgia, with especial reference to underground water resources. In accordance with this arrangement L. W. Stephenson, on the part of the United States Geological Survey, spent some time in the study of the stratigraphy and correlation of the Cretaceous formations. The Georgia Geological Survey assigned Otto Veatch as its representative in the work. Mr. Vaughan, in company with Earle Sloan, visited critical localities in Georgia near Savannah River.

An agreement was made between the Director of the United States Geological Survey and E. H. Sellards, state geologist of Florida, for cooperative work in that State. According to this arrangement Mr. Sellards and an assistant, Herman Gunter, conducted the field researches regarding the underground waters in 16 counties, comprising the central portion of the State, while the underground water investigations in the remainder of the State, as well as the stratigraphic work, were carried on by representatives of the United States

Geological Survey. Mr. Vaughan supervised the investigation on behalf of the federal Survey, and F. G. Clapp and George C. Matson were assigned to the field work and completed it as planned.

Mr. Vaughan had several conferences with Prof. Eugene A. Smith, state geologist of Alabama, with reference to stratigraphic correlations, and Professor Smith was also visited by Messrs. Clapp and Stephenson for similar consultations. A few of the more important exposures of Cretaceous formations were visited by Mr. Stephenson for the purpose of comparing the geologic sections in the more eastern States with the section in Alabama.

In Texas Alexander Deussen undertook field work and the preparation of a report on the stratigraphy and underground waters of the region extending eastward from the Sabine to the Brazos and lying south of a line crossing Marion, Upshur, Wood, Van Zandt, and Kaufman counties. The field work for this area was completed and the report is almost ready for publication.

A preliminary study was made by L. W. Stephenson, under the supervision of T. W. Stanton, of collections of Cretaceous fossils from North Carolina, South Carolina, Georgia, and Alabama, obtained in the course of work on the stratigraphy of the Atlantic Coastal Plain.

The stratigraphy and paleontology of a part of Staten Island, New York, was investigated by E. C. Jeffrey and Arthur Hollick under the direction of F. H. Knowlton, and much valuable material bearing on the stratigraphy of the Cretaceous formations of the Atlantic coast was obtained.

Northern Appalachian region.—A detailed study of the Dalmanellas of the Devonian of New York was made by H. S. Williams to illustrate the amount and kind of modification of species coordinate with geologic sequence in time. A preliminary paper by Professor Williams on the Dalmanellas of the Chemung formation was published in April, 1908, by the National Museum.

A paper on the correlation of the Devonian section of the Tioughnioga and Chenango valleys with the standard Ithaca section was finished in August, 1907, but was withheld from publication awaiting the settlement of questions of nomenclature for the Watkins Glen and Catatonk quadrangles.

Geologic work in Pennsylvania was done in cooperation with the State, which made an appropriation of $5,500 for this purpose. Detailed areal and economic surveys of the Carnegie and Warren quadrangles were completed, and the text of the Warren folio has been submitted. The areal survey of the Claysville quadrangle was completed and areal work was carried on in the Sewickley quadrangle. The work on the Clarion quadrangle was completed and additional studies were made in the Johnstown, Punxsutawney, and Houtzdale quad-

rangles. The work in Pennsylvania was in charge of George H. Ashley, with whom were associated George C. Martin, Charles Butts, M. J. Munn, Frederick B. Peck, W. C. Phalen, and Edwin F. Lines.

A. C. Spencer continued the study of the magnetite deposits of the Cornwall type in Dauphin, Lancaster, and York counties, and the final report on this work is ready for publication.

The mapping of the New Jersey Highlands was continued by W. S. Bayley, the field work being completed for the Ramapo quadrangle. Doctor Bayley spent the remainder of the field season in revising the mapping of the Raritan quadrangle and in extending the mapping of the Easton quadrangle west of Delaware River in Pennsylvania.

George W. Stose completed and transmitted for publication the Mercersburg-Chambersburg (Pa.) folio, completed the field work in the Pawpaw and Hancock (W. Va.-Md.-Pa.) quadrangles and began preparation of the folio in cooperation with the Maryland Geological Survey, and partly surveyed the Carlisle (Pa.) quadrangle.

Frank W. De Wolf nearly completed an economic bulletin and a folio for the Newcastle (Pa.) quadrangle.

E. O. Ulrich spent the month of July in the Champlain and Mohawk valleys in New York. Through the courtesy of Dr. John M. Clarke, state geologist of New York, Dr. Rudolph Ruedemann, of his staff, was detailed as guide and associate to Mr. Ulrich in a study of typical outcrops in these classic areas of American early Paleozoic stratigraphy. During about half of the time Prof. H. P. Cushing, also of the New York State Survey, accompanied Messrs. Ruedemann and Ulrich. It is believed that this association of state and federal geologists will lead to a clearer appreciation of the composition of the New York section and to greater exactitude in correlations with it.

The month of August was devoted to a continuation of stratigraphic studies in the Mississippi and Appalachian valleys, begun several years ago. Those in the Appalachian area were resumed in May, 1908. In the early part of this month Mr. Ulrich, in association with Mr. Stose, extended these studies through the Carlisle (Pa.) quadrangle, and thence northward to Harrisburg, Pa.

Southern Appalachian region.—In the Cowee (N. C.) quadrangle field work, done for the most part jointly with the state Survey, consisted in the examination of deposits of ruby, mica, and kaolin, by D. B. Sterrett, together with a review of the base of the Ocoee strata by Arthur Keith.

In the Morgantown (N. C.) quadrangle field work included the mapping of the monazite and gold-bearing sands, mainly by Mr. Sterrett. In the Dahlonega (Ga.) district the mapping of the auriferous gravels and similar deposits was completed by Mr. Keith.

For the determination of the sequence of gneisses and schists in the Dahlonega, Suwanee, and Dalton quadrangles, in Georgia, and the Walhalla quadrangle, in South Carolina, a brief reconnaissance was made by Mr. Keith.

W. C. Phalen carried on revisional work in the Ellijay (Ga.) quadrangle and in adjacent portions of the Suwanee and Dalton quadrangles.

The iron-ore deposits that appeared to be of economic interest were visited and brief accounts of them were prepared for publication in Bulletin 340 (Contributions to Economic Geology, 1907, Part I). The known bauxite deposits in Georgia, Alabama, and Tennessee were visited by Messrs. Hayes and Phalen, partly in the interest of work for the annual report on mineral resources and partly to extend the knowledge of the geology of the deposits.

Work was continued in the Birmingham (Ala.) district by Mr. Butts, in the preparation of folios, special reports, and a paper on the coal fields of Alabama.

Selected outcrops of Ordovician and late Cambrian rocks in the Appalachian Valley between Clinchport, Va., and Knoxville, Tenn., were studied by E. O. Ulrich and R. S. Bassler. The immediate object of these investigations was to determine the causes of the well-known local variations in lithologic and faunal characters of the great series of dolomites and limestones commonly referred to as the Knox dolomite. In June an areal survey was made of the Woodbury (Tenn.) quadrangle by Messrs. Ulrich and Bassler.

GEOLOGIC WORK IN CENTRAL STATES EAST OF 97°.

Areal and economic surveys in the coal fields of southern Illinois were continued in cooperation with the state Geological Survey. T. W. Savage, Stuart Weller, and J. H. Udden were employed on this work by the State, and Frank W. De Wolf, E. C. Lines, and David White by the federal Survey. Three quadrangles, the Belleville, Breese, and Galatia, were surveyed with the assistance of members of the state Survey. These quadrangles form parts of two belts of 15-minute areas, which will extend across the State at a distance of 36 miles apart. In connection with the field work systematic collection and analysis of face samples from shipping coal mines has been carried on. Preliminary reports on these quadrangles have been submitted, and final reports on the Belleville and Breese quadrangles are in preparation. A bulletin on the Peoria quadrangle was submitted by the state Survey, in accordance with an agreement made in the previous year.

The results of the Illinois surveys will be available for publication in folio form after the general correlation studies planned for the following year have been completed.

A reconnaissance study of the stratigraphy and structure of the Henderson (Ky.) and the Evansville (Ind.) coal fields and of part of the southern Illinois field was made by George H. Ashley and Frank W. DeWolf.

As part of the cooperation with the state Survey of Illinois the field study of the fossil floras of the basal "Coal Measures" in that State was continued by David White, who at the same time worked out the age and number of the coals laid down in the early Pennsylvanian basin. During the two months available this work was extended along the greater part of the western border of the coal field.

In Arkansas work was done by the United States Geological Survey in cooperation with the Geological Survey of Arkansas, Prof. A. H. Purdue, state geologist, being in charge of the work. The mapping of the slates of Arkansas and of such part of the Caddo Gap quadrangle as time would permit, for folio publication, was the object in view. E. O. Ulrich accompanied Professor Purdue to Crystal Springs, Montgomery County, for the purpose of making paleontologic studies to determine the age of the rocks in the slate region.

A reconnaissance of portions of the Cherokee and Creek Nations was made by C. E. Siebenthal to ascertain more exactly the relations of the Pennsylvanian formations in the Wyandotte (Okla.-Mo.), Independence (Kans.), and Muskogee (Okla.) quadrangles. Mr. Siebenthal subsequently took up the collection of lead and zinc statistics for the calendar year 1907, for publication in the annual report on mineral resources, and carried on this work throughout the remainder of the fiscal year.

Previous study of the critical relations of the several parts of the Keewatin and Labradoran glacial formations on the north and west sides of the Driftless Area in Wisconsin, Minnesota, and Iowa was continued by Frank Leverett, who during the winter prepared a report of progress on this work and continued the preparation of manuscript on the formations of the Michigan glacial lobe.

Areal glacial work was continued by W. C. Alden in Wisconsin, chiefly in the townships of Monroe, Bellville, Cross Plains, Baraboo, Denzer, Dells, and Briggsville, in the south-central part of the State. In June, 1908, Mr. Alden resumed field work in northern Illinois on subjects related to his previous work in Wisconsin.

Supplementary studies of the area of the Michigan glacial lobe and related tracts were made by Frank B. Taylor, who directed his attention particularly to the former beach lines and other lacustrine phenomena. Mr. Taylor made some studies in correlation on the south side of Lake Erie in Ohio and New York, and, without expense to the Survey, extended his examinations to related phenomena in Ontario. His office work was devoted [illegible] the preparation of

manuscript on the lacustrine formations associated with the Michigan glacial lobe.

Careful spirit-level surveys of the elevated beach lines of the glacial Lake Michigan were made by J. W. Goldthwait to determine the nature of the former movements of the lake level. This work was done in close association with and supplementary to that of Messrs. Taylor and Leverett. The work of Messrs. Leverett, Alden, Taylor, and Goldthwait was carried on under the general supervision of Prof. T. C. Chamberlin.

C. R. Van Hise and C. K. Leith gave a large amount of time during the winter to the completion of the final monograph on the Lake Superior region. Doctor Van Hise devoted the months of July and August to this work, which involved the writing of several new chapters, the radical revision of others, a large amount of chemical and physical investigation of the ores and the iron formations, and the direction of a draftsman continuously during the year in the revision of maps.

An extensive series of physical and chemical tests of the iron ores of the Lake Superior region was made by W. J. Mead in connection with the discussion of the origin of the iron ores forming a chapter in the forthcoming monograph.

A study of the physiographic features of the Lake Superior region was made by Lawrence Martin in connection with the preparation of a chapter on the surface features of the region for the monograph.

Some corrections of the map in the Mesabi iron region were made by Doctor Leith, who also conferred with Mr. Mead in reference to the latter's work.

A topographic and geologic model of the Lake Superior region has been prepared under direction of C. K. Leith and Lawrence Martin, by E. H. J. Lorenz, mechanician and model maker, of the University of Wisconsin. A reproduction of a large photograph of this model, which shows many interesting features, will be included in the monograph.

A. N. Winchell gave some time to the collection of available information concerning the petrography of Keweenawan lavas and intrusives.

W. S. Bayley, of the University of Illinois, gave a little time to the revision of the chapter and map on the Calumet trough of Michigan for this monograph.

The summaries of literature for a bulletin on the North American pre-Cambrian rocks were brought up to January 1, 1908, by Doctor Leith, and a revision of the general discussion was made by Doctors Van Hise and Leith. This work touches closely subjects discussed by them at a conference in Chicago on the geologic map of North America with Messrs. Chamberlin, Willis, Adams, Brock, and Miller.

Rocky Mountain region.—M. R. Campbell continued in charge of the coal-land classification and valuation in the Western States, carrying on this work in addition to supervising the surveys of various oil and gas fields in the United States.

The plans provided for the classification of about 20,000 square miles of supposed coal territory in the Rocky Mountain region. To carry out this work sixteen field parties were organized, and groups of parties working in close proximity were placed in charge of subordinates, C. A. Fisher having direct supervision of five parties in south-central Montana and north-central Wyoming, and A. C. Veatch having charge of four parties in south-central Wyoming. The other parties worked independently, with only such supervision as Mr. Campbell was able to give them.

A party under the direction of Max W. Ball carried on a geologic survey of the western part of the Little Snake River coal field, in southern Wyoming, beginning at Rawlins, on the Union Pacific Railroad, and extending southward to the Colorado line.

A party under the direction of W. R. Calvert made a survey of the Lewistown (Mont.) coal field, from July 1 to October 1, 1907. Mr. Calvert's work extended from the Great Falls coal field on the west, which was examined by Mr. Fisher during the previous year, to a point as far east of Lewistown as the workable coal beds appeared to continue.

A party under the direction of Arthur J. Collier surveyed the Miles City (Mont.) coal field, beginning work before the 1st of July and continuing until September 5, 1907, when Mr. Collier was detailed to examine mineral claims in the national forests, and Carl D. Smith assumed charge of the party in the Miles City field.

A party under the direction of Hoyt S. Gale made an examination of the northern rim of the Uinta coal basin in Colorado and Utah, working from the Danforth Hills in Colorado westward as far as Vernal, Utah. At the close of this examination Mr. Gale crossed the Uinta Mountains and made a brief survey of the Henrys Fork coal field, which lies partly in Utah and partly in Wyoming.

A party under the direction of James H. Gardner made an examination of the eastern rim of the San Juan River coal basin of northwestern New Mexico and southwestern Colorado, from July 1 to October 5, 1907. Most of this work was done in a field already described by Mr. Schrader, but the reexamination was made necessary by the fact that in the previous work the lands had not been classified according to legal subdivisions. On February 15 Mr. Gardner was again detailed to New Mexico to make an examination of several isolated coal fields in the Rio Grande Valley. From February 15 to

July 1 he was engaged in this work, examining in that time the Carthage, Hagan, Cerrillos, Santa Fe, Glorieta, and Cabezon fields.

C. A. Fisher was placed in charge of five parties operating in the vicinity of Billings, Mont. The heads of these parties were Messrs. Calvert, Stone, Woolsey, Washburne, and Woodruff. From July 1 to October 31 Mr. Fisher was engaged in supervising the work of these parties.

A party under the direction of Willis T. Lee was engaged in the examination of the Grand Mesa coal field of Colorado from July 1 to September 30, 1907. This field is the eastern continuation of the Book Cliffs coal field, examined during the previous year by George B. Richardson. From October 1 to October 7 Mr. Lee was engaged in the study of the "Red Beds" in the vicinity of Las Vegas, N. Mex.

A party under the direction of George B. Richardson made a survey of the coal fields of southwestern Utah, including the so-called anthracite field of New Harmony and the bituminous fields of the Colob Plateau. Mr. Richardson was engaged in this work from July 1 to October 1, after which he proceeded to Texas and continued his work in the El Paso and Van Horn quadrangles.

A party under the direction of A. R. Schultz was engaged in the survey of the Rock Springs (Wyo.) coal field from July 1 to December 23, 1907. The geologic work in this field was carried on in conjunction with a resurvey of the land lines of a part of this region and the inspection of land surveys in another part of the same region under the General Land Office.

A party under the direction of E. Wesley Shaw was engaged in the survey of the Glenrock (Wyo.) coal field from July 1 to October 16, 1907.

A party under the joint direction of Carl D. Smith and Prof. A. G. Leonard, state geologist of North Dakota, made a survey of the Sentinel Butte coal field of North Dakota and eastern Montana. Professor Leonard was able to be with the party only a few weeks, and consequently the major portion of the work devolved upon Mr. Smith. He was engaged in this work from July 1 to September 5, when, owing to the transfer of Mr. Collier to other fields of work, Mr. Smith was detailed to Miles City to continue the unfinished work in that field.

A party under the direction of E. E. Smith made a geologic survey of the Great Divide Basin coal field of Wyoming from July 1 to November 15, 1907. The work of this party connects with that of Mr. Ball on the south, that of Mr. Schultz on the west, and that of Mr. Veatch, done during the previous year, on the east.

A party under the direction of R. W. Stone made a geologic survey of a large territory north and west of the Crazy Mountains, Montana, from July 1 to October 18, 1907. This work was done on

the supposition that large bodies of coal occur in this region, but the work of Mr. Stone shows that coal of workable thickness is entirely absent, and that there is no reason for regarding this area as a coal field.

A party under the direction of Joseph A. Taff made a geologic survey of the Sheridan (Wyo.) coal field from July 1 to October 31, 1907.

A. C. Veatch was placed in charge of the parties of Messrs. Schultz, Shaw, Smith, and Ball in central Wyoming. In addition to supervising the geologic work of these parties Mr. Veatch was authorized by the General Land Office to make a resurvey of a small area north of Rock Springs and to inspect certain contract surveys in the same locality. This work engaged Mr. Veatch's attention from July 1 to September 19, 1907, when he was transferred to the office of the President to investigate the mining laws of Australasia.

A party under the direction of C. W. Washburne made a geologic survey of the coal fields on the northeast side of the Bighorn Basin, Wyoming, from July 1 to October 31, 1907. This work, although principally in Wyoming, extended northward from Montana for 20 or 30 miles, including all of the so-called Bridger coal field in the valley of Clark Fork.

Carroll C. Wegemann was engaged during the field season of 1907 and much of the office season of 1907–8 as an assistant to Arthur J. Collier and Carl D. Smith. On April 20, 1908, Mr. Wegemann was instructed to proceed to Miles City, Mont., and join a party from the Forest Service in the examination and classification of coal lands in the Otter National Forest. This work occupied his time until May 29, when he returned to Helena, Mont., for the purpose of collecting data regarding the land surveys of the Bull Mountain region. Mr. Wegemann completed this work by June 10, and then proceeded to Sheridan, Wyo., to assist Mr. Gale in the survey of the Buffalo coal field.

A party under the direction of L. H. Woolsey made a geologic survey of a portion of the Musselshell Valley, including the southern part of the Bull Mountain field, Montana, from July 1 to October 29, 1907. A large part of the area examined was found to be barren of workable coal beds, so that the energy of the party was largely centered on the Bull Mountain field, which contains a great many coal beds and doubtless will become an important coal producer. In order to complete the survey of this field at an early date, so that the lands might soon be restored to coal entry, R. W. Richards, who has been associated with Mr. Woolsey in the work, returned to the field on May 1, 1908, and with a small party continued the surveys of the previous season. This work is in progress July 1 and will soon be completed.

A party under the direction of E. G. Woodruff made a geologic survey of the coal fields on the southwest side of the Bighorn Basin, Wyoming, including the Red Lodge field in Montana.

T. W. Stanton, paleontologist, spent the months of July, August, and September in field work on the stratigraphy and paleontology of the coal-bearing formations of the Rocky Mountain region, in cooperation with the geologic parties that were doing areal and economic work in the various coal fields. Visits of sufficient length to determine the important features of the sections were made to the parties near Rawlins, Rock Springs, Casper, Sheridan, and Cody, in Wyoming, and near Red Lodge, Crazy Mountains, and Judith Mountains, in Montana.

F. H. Knowlton, assisted by A. C. Peale, spent the field season in the study of stratigraphic and paleontologic problems along Missouri and Yellowstone rivers in North Dakota and Montana, in connection with the coal work, procuring much paleobotanic material for use in the correlation of various Upper Cretaceous and Tertiary formations. Mr. Knowlton also visited the Bighorn Basin, Wyoming, and the northern side of the Crazy Mountains, Montana, studying the stratigraphy and paleontology of these regions.

A detailed survey of the central pre-Cambrian area of the Black Hills, South Dakota, was begun by A. Johannsen. The areal distribution of the slates, schists, and intrusives of a portion of the area was mapped and a large number of specimens were collected. The key to the structure was obtained.

Some revision work in the Black Hills was done by N. H. Darton, in the Hermosa, Rapid, and Deadwood quadrangles.

During the field season of 1907 S. F. Emmons, under leave of absence without pay, took charge of a geologic survey of the important copper-mining district of Cananea, in Sonora, Mexico, not far south of the international boundary. The product of this district is entirely tributary to the United States and its geologic structure presents some phenomena not hitherto observed in mining districts within our boundaries, so that its study serves to round out investigations of natural processes of ore distribution that have been carried on by this Survey.

Whitman Cross did no field work during the summer of 1907, being absent for several months on leave of absence without pay. He was assisted by Howland Bancroft from December 1 to June 30 in office work connected with the Ouray and Engineer Mountain folios of Colorado.

Work was resumed by Mr. Cross in June, 1908, on the geology of the San Juan region, Colorado, particularly on that of the Lake City and San Cristobal quadrangles, where work had been done in previous seasons. The survey of the former area will be completed during

the coming season, and that of the latter will be carried as far as possible toward completion.

Frank C. Schrader spent several months in examining mining claims in the national forests of Colorado and occupied the remainder of the year in field and office work on a report on the mineral deposits of western Arizona.

F. B. Weeks continued the reconnaissance of the western phosphate field in Idaho, Wyoming, and Utah, and spent about a month at Osceola, Nev., in a study of the mineral resources of the Osceola and Tungsten mining districts. He also, in company with V. C. Heikes, devoted a few days to a reconnaissance of the Fort Hall mining district, Idaho.

In Nevada F. L. Ransome revisited the Goldfield and Bullfrog districts to gather supplementary data. Reports embodying these data were nearly completed during the year and require only the insertion of information afforded by recent mining developments to be ready for publication. The Goldfield report is by Mr. Ransome, and the Bullfrog report by Messrs. Ransome, W. H. Emmons, and G. H. Garrey.

The final report on the geology and ore deposits of the Cœur d'Alene district, Idaho, by F. L. Ransome and F. C. Calkins, was completed and submitted for publication in August, 1907. It is now available for distribution.

A detailed study was made of the region in the vicinity of the Canadian Pacific Railway between Castle Mountain, Alberta, and Field, British Columbia, by Charles D. Walcott and L. D. Burling. The sections of Castle Mountain, Lake Louise, Mount Bosworth, and Mount Stephen were measured in detail, and numerous collections of fossils were obtained, which have an important bearing on the early Paleozoic succession in Montana, Idaho, and Utah. During the field season of 1908 Doctor Walcott will continue this investigation by making a detailed study of the section along the line of the forty-ninth parallel between Montana and British Columbia, in an attempt to correlate, if possible, the rocks studied by him in Canada with those in the United States. During September, 1907, Doctor Walcott spent two weeks in making a collection of Cambrian fossils in southeastern Idaho. The office work of Doctor Walcott for the fiscal year ended June 30, 1908, has been the completion of a monograph on the Cambrian Brachipoda.

The pre-Cambrian rocks of the Laramie Hills of southeastern Wyoming were studied in detail and mapped within the limits of the Sherman quadrangle by Eliot Blackwelder. It is believed that these studies will materially aid an understanding of the ancient rocks that occur generally in the cores of many western mountain ranges. An examination of similar rocks in the Laramie quadrangle was

made by Mr. Blackwelder, and the final manuscript for the Laramie-Sherman folio was submitted for publication.

Detailed mapping of the geology of the Shasta County copper region, in California, begun by L. C. Graton in 1906, was extended by B. S. Butler during two months of the summer of 1907, when Mr. Graton was on leave in Mexico. The mapping was completed in November, and Mr. Graton completed the underground investigation of the mines in January. Progress has been made on the final report.

The investigation of the copper resources of the country, which was begun by Mr. Graton in 1906, was continued during the year, and trips were made to nearly all the important copper districts not already visited.

The final joint report on the mining districts of New Mexico by Messrs. Lindgren, Graton, and Gordon was carried nearly to completion.

F. C. Calkins continued detailed areal mapping in the Philipsburg district, Montana. The work has been virtually completed, but it was determined that a visit to the field in company with a paleontologist would be necessary for the correlation of the Mesozoic formations.

W. H. Emmons, after completing the survey of the metalliferous deposits of the Philipsburg quadrangle, made a study of the gold deposits of the Little Rocky Mountains, Montana.

J. M. Boutwell was engaged in the preparation of the annual reports on the production of zinc, lead, and quicksilver during the year 1906. He also visited the Park City mining district, Utah, and procured valuable data on mining developments there during the last year. In the office he has since prepared sections on gold-bearing gravels in Calaveras County, Cal., and resumed the preparation of the report on the Park City mining district, Utah, with a view to completing it this year.

T. Wayland Vaughan resurveyed a portion of the Brackett (Tex.) quadrangle. The survey of this area is now completed and the manuscript, including text and geologic map, will soon be submitted for publication as a folio of the Geologic Atlas.

Pacific coast.—Detailed surveys were made of the Coalinga oil district, Fresno County, and the region as far south as Dudley, Kings County, Cal., by Ralph Arnold, assisted by Robert Anderson. Special attention was given to the details of the underground geology in the proved territory in order to discover the conditions of the occurrence of petroleum in this particular field, and also to a study of the structure and stratigraphy of the adjacent regions with a view to obtaining information as to the extension of the productive area, so as to decrease the cost of development by reducing the number of dry holes drilled. A study of the paleontology, which bears a peculiarly important relation to the interpretation of the structure and stratigraphy

in this district, was carried on simultaneously with the strictly economic work. Both a preliminary and a final report on the district were prepared. A continuation southward to Sunset, Kern County, of the investigations begun in the Coalinga district will be carried forward during the field season of 1908. Mr. Arnold also spent a short time in the Santa Cruz quadrangle, doing some supplementary mapping and attending a field conference with George D. Louderback relating to the Franciscan-Knoxville question, and made a brief visit to the Miner ranch oil field, in Contra Costa County, on which he prepared a short report.

A bulletin on the magnesite deposits of California was prepared by Frank L. Hess and is in course of publication.

The detailed mapping of the Riddles quadrangle, in Oregon, was completed and work on the Grants Pass quadrangle was begun by J. S. Diller, assisted by G. F. Kay. Mr. Diller also investigated, for the Forest Service, the coal in the northern part of the Siskiyou National Forest and reported later that a large number of coal claims that have been taken up are nonworkable under present conditions. In response to numerous requests by citizens of Oregon, a reconnaissance was made by Mr. Diller about Mount Bolivar, in Douglas County, to determine the mineral character of the land. With James Storrs, Mr. Diller visited Oroville, Cal., to study the Mesozoic plant beds of that region. This study was continued in Curry County, Oreg., and Trinity and Tehama counties, Cal., to determine more closely the epoch of greatest deformation and mineralization in the Klamath Mountains, where mining is extensive. In studying the asbestos deposits of the United States Mr. Diller visited Sall Mountain, Georgia; Rocky Mount and Bedford, Virginia; Lowell, Vermont; Casper Mountain, Wyoming; Grand Canyon, Arizona; and Towle, California.

The investigation of Pleistocene glaciation in the Sierra Nevada has been continued by Willard D. Johnson, attention being given to contemporary deformation and volcanism as locally complicating and radically affecting the glacial record. The resulting studies have been carried far enough, it is believed, to warrant a general statement of results, and a report is now well advanced.

In June, 1907, Prof. James Perrin Smith spent three weeks in the West Humboldt Range of Nevada, studying the Triassic stratigraphy and collecting Triassic fossils to illustrate a monograph. Later he visited the Klamath Mountains of Shasta County, Cal., and spent three weeks in collecting Upper Triassic fossils. In Nevada he collected several new species of Middle Triassic cephalopods, which have been included in a monograph on that fauna. In California Professor Smith found several new species of cephalopods and discovered in the Upper Triassic limestone a coral reef that forms an important

lithologic horizon and gives a new element to the faunas of that series in America.

Progress was made in arranging the material collected and in preparing a monograph on the marine Middle Triassic faunas of America, which is not completed.

The work of Waldemar Lindgren has consisted largely of administrative duties in connection with the section of metalliferous deposits and the section of metal statistics (the larger part of the time having been given to the latter), and with the examination of mining claims in national forests. The remaining time has been given to geologic field work and office work and to testimony before the United States court in connection with prosecutions instituted by the Post-Office Department for the abuse of mailing privileges.

In cooperation with the technologic branch N. H. Darton made an examination of the geology of Portland, Oreg., and Tacoma and Seattle, Wash., especially in relation to structural materials.

GENERAL GEOLOGIC AND PALEONTOLOGIC WORK.

The important investigations relating to river hydraulics with special reference to laws of detrital load were continued by G. K. Gilbert in cooperation with the water-resources branch. In studying the obstruction of Sacramento River, rough measurements were made of the pits formed by past hydraulic-mining operations, from which estimates were made of the amount of material removed in the basin of Yuba River. In order to elucidate the conditions affecting the surcharged river and the possibilities of its treatment, the relations of load to gradient and volume in stream flow were studied. This work, the application of which is much broader than the specific and local problems here involved, was carried forward in the laboratory of the University of California. The results thus far obtained include the relations of load to slope, of load to discharge, of load to coarseness of detritus, and of load to form of cross section of channel.

The partial submergence of shell mounds about the shores of San Francisco Bay, as determined by the University of California, led to an investigation by Mr. Gilbert of such mounds near the mouth of Sacramento River, in order to discover if such subsidence had taken place there.

Prof. Harry Fielding Reid has continued to collect all available data relative to earthquakes in the United States. The International Seismological Association, of which this country is a member, held its first general assembly last September at The Hague. Professor Reid attended the meeting as delegate from this country. The assembly voted to continue Strassburg as the location of its central bureau for the next four years and elected Professor Schuster, the delegate from Great Britain, as the president of the association for

the same period. A number of important scientific questions were debated and the central bureau presented a compilation of all the earthquakes in the world for the year 1904. The association promises to be a great stimulus to seismologic investigation.

W. H. Dall identified between 3,000 and 4,000 fossils for field parties of the Survey. He also continued his studies of the post-Eocene fauna of the Pacific coast. The report on the Miocene of Oregon is now in course of publication.

George H. Girty, in addition to preparing reports on material referred to him, made preliminary studies of some Arkansas collections of fossils and described the fauna with which the phosphates were associated in Idaho and Utah. He spent a month in the study of the types of Winchell's Carboniferous species preserved at Alma and Ann Arbor, Mich., and devoted another month to collecting paleontologic and stratigraphic data in the Carboniferous rocks of Arkansas and Kansas.

From July 1 until August 15 T. Wayland Vaughan was on leave of absence without pay, studying Paleozoic fossil corals for the New York State Museum, in accordance with an arrangement between the director of that museum and the Director of the United States Geological Survey. In April, 1908, in response to an invitation from the Carnegie Institution of Washington, he undertook special investigations of the geology of the Florida keys and reefs, of the near-shore bottom deposits of the ocean, and of the recent corals of the region, with reference to environmental conditions, and initiated a series of experiments for the purpose of procuring data on the factors influencing variation and determining distribution, the information obtained from the last two investigations to be used as a basis for the reconstruction of the physical conditions under which fossil faunas lived. Valuable information was procured on each of the subjects to which attention was paid.

Work in vertebrate paleontology has been continued under the direction of Prof. Henry Fairfield Osborn. The monograph on the Ceratopsia, begun by O. C. Marsh, continued by J. B. Hatcher, and edited and completed by R. S. Lull, has been published. The monograph on the Stegosauria, originally assigned to F. A. Lucas, but transferred to R. S. Lull, is slowly progressing through simultaneous studies in the National, Yale, and American museums. No allotment has been made by the Survey during the present year for the work of Professor Lull.

Except during two periods of absence abroad and in the field, Professor Osborn has been engaged continuously in completing the monograph on the titanotheres. The study of the stratigraphy of the Eocene of the Rocky Mountain region, reported last year as under way, has been finished, Professor Osborn having made a special

journey to the Washakie to complete his observations. This stratigraphic and paleontologic correlation forms the subject of a special paper now in course of publication by the Survey and will contribute to the geologic section of the titanothere monograph. It is expected that the manuscript of this monograph will be finished in November, 1908.

The Sauropoda in the Paris and British museums have recently been briefly studied by Professor Osborn, who has done some work on the Sauropoda monograph, with the assistance of W. K. Gregory.

David White was engaged during the larger part of the year in studying the kind, quality, and physical and chemical composition of coals of various epochs and areas, the conditions of deposition, the nature of the original material, and the present state of the organic matter. In the study of the microscopic structures of the coals he has had the aid of Reinhart Thiessen for most of the year. This work has been carried on at the request of the technologic branch, which has borne the expense of field work for two and a half months in the western areas and has paid one-half of Mr. White's salary and the entire salary of his assistant. A paper by Mr. White, discussing the relation of oxygen in coal to its calorific value, is now in preparation for publication.

F. H. Knowlton, besides performing field work, has studied and reported on more than 700 collections of fossil plants for the use of geologists in locating and correlating horizons in the Mesozoic and Tertiary, mainly in Alaska and the Rocky Mountain region. A little time was also devoted to preparing a report on the stratigraphy and paleontology of the Livingston formation in Montana.

Work on the bibliography and compendium of paleobotany has been carried on by Miss L. M. Schmidt, who for about two-thirds of the year has had the aid of Miss I. P. Evans. This work was done under the joint supervision of Messrs. White and Knowlton.

The preparation of the general geologic map of North America, which is being compiled in cooperation with the geological surveys of Canada and Mexico, has been continued by Bailey Willis. The basis of compilation is the map prepared in 1906 for the geological congress at the City of Mexico and printed at the expense of the Mexican Government, but it has been found desirable to revise a great deal of the material incorporated in that map in order to bring it up to date. The work includes also the preparation of a general description of the map and of the sources of the information it embodies, an account of the several geologic provinces of North America, and maps showing the geography of the continent at different geologic periods—all to be published in a professional paper of the Survey.

E. C. Harder made a reconnaissance examination of the principal manganese and manganiferous-ore deposits of the United States,

giving special attention to their commercial aspect and preparing a report on them.

For many years N. H. Darton has been collecting data on underground temperatures. During the last year a number of very important observations were made and the preparation of a list of all deep underground temperatures determined in the United States was continued.

DIVISION OF ALASKAN MINERAL RESOURCES.

The work of the division of Alaskan mineral resources was carried on under an appropriation of $80,000 for "continuation of the investigation of the mineral resources of Alaska," work of the following classes having been done: Reconnaissance and detailed geologic surveys; special investigations of mineral resources; reconnaissance and detailed topographic surveys; and investigations of water resources in reference to supply available for placer mining.

PERSONNEL.

The personnel of the division varies greatly during the year by transfers of technical employees to and from other divisions of the Survey and by the employment of temporary clerks, according to the demands of the work. Throughout the year 1 geologist in charge, 7 other geologists, 3 topographers, and 3 clerks have been employed. In addition 5 geologists were employed a part of the time on a per diem compensation. In May, 1908, 2 additional geologists, on annual salaries, were added to the force by transfer from other divisions. One additional topographer was employed up to the 1st of March, and 2 engineers were detailed to the division from the water-resources branch, giving about two-thirds of their time to the Alaskan work. In May, 1908, 2 additional engineers were temporarily detailed to the division.

During the season of 1907 the field force included also 1 topographic and 1 engineering field assistant and about 24 teamsters, cooks, etc. The temporary assistants in the field force for 1908 included 2 geologic and 2 topographic field assistants, with 25 laborers. Two temporary clerks have been employed in the office for three and six months. On June 30, 1908, the division included 1 geologist in charge, 9 other geologists on annual salaries and 3 geologists employed at a per diem compensation, 2 geologic field assistants, 3 topographers and 2 topographic field assistants, 4 engineers, 25 camp hands, and 3 clerks.

FIELD OPERATIONS IN SEASON OF 1907.

General outline.—Twelve parties engaged in Alaskan surveys and investigations during the field season of 1907. Six of these were car-

rying on geologic work, four were making topographic surveys, and two were engaged in stream gaging. The aggregate area covered by geologic reconnaissance surveys is 4,000 square miles; by detailed geologic surveys, 400 square miles; by topographic reconnaissance surveys, 6,125 square miles; and by detailed topographic surveys, 501 square miles. In addition, reconnaissance investigations of water resources were carried over an area of 1,000 square miles and studies were made in considerable detail over 400 square miles. Eleven of the 28 mining districts of Alaska in which developments are going on, including all but two of the most important, were visited by members of the staff. The following table shows the allotment of the appropriation to the different districts of Alaska. The figures include the cost of both field and office work as well as of inspection.

Allotment to Alaskan surveys and investigations, 1907.

Continuation of general investigation of coal resources	$4,700
Surveys and investigations in—	
Southeastern Alaska	5,300
Copper River region	12,000
Yukon region	41,000
Seward Peninsula	17,000
	80,000

The following table shows the progress of Alaskan surveys since the beginning of systematic work in 1898 and the need for extending the map work:

Progress of surveys in Alaska, 1898–1907, in square miles.

Year.	Appropriation.	Geologic.		Topographic.		Hydrographic.	
		Reconnaissance.	Detailed.	Reconnaissance.	Detailed.	Reconnaissance.	Detailed.
1898	$46,189.60	9,500		14,912			
1899	25,000.00	6,000		8,688			
1900	25,000.00	10,000		11,152			
1901	35,000.00	12,000		15,664			
1902	60,000.00	17,000		20,304	336		
1903	60,000.00	13,000	336	15,008			
1904	60,000.00	6,000		6,480	480		
1905	80,000.00	8,000	550	8,176	948		
1906	80,000.00	9,000	414	10,768	40	1,000	200
1907	80,000.00	4,000	400	6,125	501	1,000	400
	551,189.60	94,500	1,700	117,277	2,305	2,000	600
Percentage of total area of Alaska		16.11+	.3–	20	.4	.3+	.1+

Administration.—As in previous years, the administration of the Alaskan division was in the hands of Alfred H. Brooks, who also devoted considerable time to various geologic problems connected with the investigation of the mineral wealth of the Territory. He also supervised personally the collection of statistics of the precious metals in the Territory and carried on some field work in southeast-

ern Alaska and the Fairbanks district. The general supervision of the topographic work, as in previous years, was in charge of T. G. Gerdine until June, when he was succeeded by R. H. Sargent in this work. During the absence of the chief of the division E. M. Aten was left in charge of the office.

In pursuance of a general plan outlined two years ago, the study of the coal-bearing rocks of the Territory has been continued by W. W. Atwood and H. M. Eakin, who in 1907 visited the coal-bearing areas of southeastern Alaska and the Yukon and in connection with this work did some topographic and geologic mapping.

Southeastern Alaska.—The most important part of the geologic reconnaissance mapping in southeastern Alaska having been completed, detailed surveys were begun in 1907. A large part of the copper-producjng district of Kasaan Peninsula, on Prince of Wales Island, including an area of 64 square miles, was mapped topographically by D. C. Witherspoon and J. W. Bagley in May, 1908, on a scale of 1:62500, and the same area was subsequently covered with geologic surveys made by C. W. Wright and Sidney Paige. Unfortunately, the weather conditions and other interruptions prevented the completion of these surveys, which are, however, now being continued.

Copper River region.—Though the geologic and topographic mapping in the Copper River basin was practically completed in 1902, the important industrial advancement in this field made it urgent that a reexamination of the copper-bearing belts should be undertaken, in order to collect the data bearing on the mineral wealth which had become available by the mining developments, and to embody it in a second edition of the report on this field. The Kotsina-Chitina copper belt, the most important, was chosen for investigation in 1907 and the work was carried to completion by F. H. Moffit and A. G. Maddren.

Yukon basin.—In view of the large gold production and important mining developments in the Fairbanks district, a detailed survey of this district was determined upon. This survey was made by T. G. Gerdine and R. H. Sargent, who mapped an area of 436 square miles for publication on a scale of 1 mile to the inch, with 25-foot contours.

In the Yukon region, where the water supply is an all-important feature of the placer-mining industry, the rainfall is slight and the stream flows are small. As there was urgent need for hydrographic investigation in this region, C. C. Covert, hydrographer, was detailed to begin work in the Fairbanks district, the largest producer of placer gold in the region. A single season's stream measurements can not be conclusive, yet the results are of considerable value in estimating the amount of water available for mining purposes.

As part of the plan to carry a topographic reconnaissance map over the most important parts of Alaska as soon as means permit, it was determined to continue the mapping in the Yukon-Tanana region

during 1907. To this end D. C. Witherspoon and J. W. Bagley mapped an area of about 6,000 square miles lying between the international boundary, the Tanana, the Yukon, and the mouth of the Delta.

In the same general field geologic studies of the mineral resources were continued by L. M. Prindle, who completed the geologic mapping of the Fortymile quadrangle (submitted for publication) and also visited a number of other localities which promise to throw light on the geology and mineral resources.

Seward Peninsula.—As part of the plan to map geologically the important mining districts of Seward Peninsula in detail, the Solomon and Casadepaga districts were covered during the last season. This work was carried on by P. S. Smith, F. J. Katz, and George I. Findlay over an area of 400 square miles of exceedingly intricate geology, and important clues were obtained in regard to the structure and mineral resources of the peninsula. The complexity of the field, however, makes it necessary to supplement this work by further investigations before the report can be published. For this reason also the report on the geology of the Nome and Grand Central quadrangles has been withheld from publication, it being necessary to settle certain problems by further field investigations.

In accordance with the general plan made for the investigation of the water resources of Seward Peninsula two years ago, F. F. Henshaw, assisted by Raymond Richards, was detailed to continue stream measurements in this area. By this work additional data were obtained in the area previously examined. The work was also extended both northward into the Kougarok district, where important mining developments are going on, and eastward into the Solomon River region. It is expected that this preliminary study of the water resources of Seward Peninsula can be brought to a close during another field season.

FIELD OPERATIONS IN SEASON OF 1908.

Thirteen parties were dispatched to Alaska in March, April, May, and June, and another party will be sent early in July. One of these parties is carrying on detailed topographic surveys in southeastern Alaska. Another party is doing detailed geologic work in the same region, and still another is engaged in studying the copper-bearing region at the headwaters of White, Tanana, and Copper rivers. A detailed topographic survey of the eastern and best-developed portion of the Kotsina-Chitina copper belt was begun in April. The reconnaissance of the copper-bearing area of Prince William Sound is being completed. The coal-bearing rocks on Herendeen Bay are being investigated, and incidentally some reconnaissance surveys of this area are to be undertaken.

In the Yukon region a detailed geologic survey of the Fairbanks special area and an investigation of the water resources of the Fairbanks, Birch Creek, and Rampart regions have been begun. A party is also engaged in continuing the topographic reconnaissance survey of the Yukon-Tanana region, including a small area lying north of the Tanana between Fairbanks and the Delta, and a large area lying south of the Tanana between the Delta and the Nenana. A preliminary survey of the newly discovered Innoko placer district has been undertaken.

In Seward Peninsula two men are completing a reconnaissance of the water resources available for placer mining, and two parties are engaged in general studies of the stratigraphy and areal geology to obtain information needed in investigating the mineral resources.

OFFICE WORK.

It is gratifying to state that the office work bearing on the study of notes and specimens and also the preparation of manuscripts has been brought up to date, with the single exception of a report on the Mount McKinley region, by the geologist in charge.

In addition to the reports issued, there have been submitted for publication the following manuscripts: "The Ketchikan and Wrangell mining districts," by F. E. and C. W. Wright (Bulletin 347); "Physiography and glacial geology of the Yakutat Bay region, Alaska," by R. S. Tarr, with a chapter on the bed-rock geology, by R. S. Tarr and B. S. Butler; "Geology of the Seward Peninsula tin deposits," by Adolph Knopf (Bulletin 358); "Mineral resources of the Kotsina-Chitina copper belt," by F. H. Moffit and A. G. Maddren; and "Description of the Fortymile quadrangle, Yukon-Tanana region," by L. M. Prindle.

Two manuscripts bearing on the geology and mineral resources of Seward Peninsula, entitled "Geology of the Nome and Grand Central quadrangles," by F. H. Moffit, F. L. Hess, and P. S. Smith (nine-tenths completed), and "Geology of the Solomon and Casadepaga quadrangles," by P. S. Smith and F. J. Katz (three-fourths completed), are awaiting the solving of some general stratigraphic problems in Seward Peninsula. The report on "Copper deposits of the Kasaan Peninsula," by C. W. Wright, is about half done, but a month more of field work will be required before office work is undertaken. Mr. Atwood's summary report dealing with the Cretaceous and Tertiary coals of Alaska is about half done. The report entitled "An exploration in the Mount McKinley region," by Alfred H. Brooks, is three-fourths completed.

GEOLOGIC RESULTS.

It is difficult to summarize the geologic results of one year's work, as these may embody much previous preparation and study and are

usually attained by gradual evolution. Worthy of record, however, is the additional knowledge gained on the genesis and distribution of the copper deposits of southeastern Alaska by C. W. Wright, and on the tin and other metal-bearing lodes of Seward Peninsula by Adolph Knopf. L. M. Prindle's studies in the Yukon-Tanana region point to the conclusion that large batholithic masses of intrusive rocks are there mantled by a comparatively thin shell of metamorphic sediments and that the gold deposits are closely connected with the intrusions. W. W. Atwood's investigations indicate that there was more than one extensive period of base-leveling in the Yukon basin. In Seward Peninsula Messrs. Smith and Katz have obtained evidence of exceedingly intricate folding of the metamorphic sediments of the Nome group. The Chitistone limestone in the Copper River region, long believed to be Carboniferous, has been proved to be Triassic by fossils collected by Messrs. Moffit and Maddren and determined by T. W. Stanton. This adds at least 4,000 feet of strata, and probably double that amount, to the Triassic section of central Alaska.

The report on the geology and mineral resources of the Controller Bay region, by G. C. Martin (Bulletin 337), describes the geography and the bed-rock, glacial, and economic geology of this region, which lies on the Pacific coast of Alaska between meridians 143° 45′ and 144° 40′. Most of the bed-rock formations fall into two groups, one of which is known to be Tertiary (Miocene?), and the other is probably Tertiary. There is also a small area of metamorphic rocks of unknown age. The sediments are closely folded and profoundly faulted. Igneous rocks are represented solely by a few dikes. The mineral resources include some oil seepages, with two wells that have made a small production. Of far greater importance are the coal beds. These coals are anthracite and semibituminous and include some coking coals. They are known to underlie an area of 56.4 square miles, and the field probably extends to the northeast, beyond the area mapped.

DIVISION OF MINERAL RESOURCES.

The work of the division of mineral resources consisted in the preparation of reports on the mineral resources of the United States for 1906 and 1907. The report for 1906 was completed, published, and distributed, and the report for 1907 was prepared in part, seventeen chapters of it having been completed before the close of the fiscal year 1907–8 and transmitted for publication separately in advance of the volume. The chapters on aluminum and bauxite, cement, asbestos, monazite and zircon, and phosphate rock were printed and distributed before June 30, and the manuscript for the reports on asphalt and bituminous rock, barytes, anthracite coal, fluorspar and cryolite, fuller's earth, gypsum, manganese ores, mica, mineral paints, salt and bromine, tin, and slate was submitted for publication. The

production statistics for many other minerals were announced to the press for publication in advance of the full report.

Waldemar Lindgren, geologist in charge of economic geology of metalliferous ores (except iron), has given about one-half of his time to the administrative work on the same subjects for this division. During July and August, 1907, Mr. Lindgren spent some time in the Denver office, having been detained in that city as witness in the suit instituted by the postal authorities against the Lost Bullion Mining Company of New Mexico. During March and April Mr. Lindgren made a tour of inspection covering the three suboffices, San Francisco, Salt Lake City, and Denver.

Congress having failed to make specific appropriations for continuing the investigation of the black sands of the Pacific coast and other portions of the United States, this investigation was discontinued July 1, 1907.

A considerable part of the time of the experts employed in this division is consumed in answering technical inquiries and making visual examinations of mineral specimens that are submitted by numerous persons for determination. Inquiries for information as to the character of ores are answered as promptly as possible, and such information is given freely where a chemical analysis or assay is not required.

DIVISION OF CHEMICAL AND PHYSICAL RESEARCH.

In the physical laboratory George F. Becker continued his investigations on geophysical problems, with particular reference to their application to geology. C. E. Van Orstrand has remained in immediate charge of the work on elasticity. In addition to theoretical investigations and the reduction of observations made at the Washington Monument, systematic observations have been made on the elastic after-effect of steel tapes maintained at a constant temperature. The problem presents many difficulties from either a theoretical or an experimental standpoint; but the possibility of its application to a precise discussion of the stress-strain relation, the variation of electric resistance, the condition of isostasy which probably exists in the crust of the earth, the internal resistances of solids, etc., would seem to justify a general investigation of high precision. A few experiments on the diffusivity of solid metals are being conducted, partly with the hope of throwing some light on the mechanism of the elastic after-effect, but chiefly for the purpose of investigating a very interesting property of matter which has hitherto received but little attention from scientific men. The following publications indicate the scope of these investigations:

Becker, G. F., Current theories of slaty cleavage. (Am. Jour. Sci., July, 1907.)

Becker, G. F., and Van Orstrand, C. E., Tables of hyperbolic functions. (Now in course of publication by the Smithsonian Institution.)

Van Orstrand, C. E., Inverse interpolation by means of a reversed series. (Philos. Mag., May, 1908.)

Becker, G. F., Age of a cooling globe in which the initial temperature increases directly as the distance from the surface. (Science, February 7, 1908.)

Becker, G. F., Relations of radioactivity to geology and cosmogony. (Bull. Geol. Soc. America.)

In the chemical laboratory during the year 116 quantitative analyses were reported, and also 826 qualitative determinations, chiefly of minerals sent for examination by persons not connected with the Survey. F. W. Clarke completed and published during the year his bulletin (No. 330) entitled "The data of geochemistry." He also published a paper on the composition of two marine sediments—the average "red clay" and the intermediate terrigenous clay. W. F. Hillebrand published an important paper on vanadium minerals from Peru, and a joint paper with W. T. Schaller on the mercury minerals of Texas. He also made a considerable number of analyses of lead bullets, furnishing data for use of the United States Senate committee in the Brownsville investigation. He conducted and completed an investigation on the determination of ferrous iron and water in rock analyses. E. C. Sullivan continued his work on the chemistry of ore deposition until April 1, when he severed his connection with the Survey, having accepted an invitation to engage in work for a private firm. George Steiger, whose time was largely occupied with routine work, completed and published the results of two investigations on analytical methods, one on a new form of colorimeter and the other on the estimation of small quantities of fluorine. He also did some work on the dehydration of gypsum and on the precipitation of zirconium as phosphate. W. T. Schaller, in addition to his necessary routine work, including a large number of mineral determinations, published several papers on mineralogical subjects. A paper by Messrs. Hillebrand and Schaller on the mercury minerals from Terlingua, Tex., is nearly ready for publication as a bulletin of the Survey.

TOPOGRAPHIC BRANCH.

ORGANIZATION.

The organization of the topographic branch remained the same as at the close of the last fiscal year until January 18, 1908, when R. B. Marshall was appointed chief geographer and T. G. Gerdine succeeded Mr. Marshall as geographer in charge of the Pacific division. The organization is as follows:

Atlantic division, Frank Sutton, geographer in charge.

Central division, W. H. Herron, geographer in charge.

Rocky Mountain division, E. C. Barnard, geographer in charge.

Pacific division, T. G. Gerdine, geographer in charge.

Inspectors of topography, J. H. Renshawe, geographer; W. M. Beaman and F. E. Matthes, topographers.

E. M. Douglas, geographer in charge of office prior to the appointment of the chief geographer, retains immediate supervision of the computing and instrument sections, and is in general charge of the office administration of the topographic branch in the absence of the chief geographer. During April, May, and June Mr. Douglas was in charge of the survey of the boundary of the Luquillo National Forest in Porto Rico.

Henry Gannett, geographer, was absent on leave during the whole year while assistant director of the Cuban census.

PERSONNEL.

The technical corps of the topographic branch was increased during the year by the appointment of 16 junior topographers, 4 assistant topographers, and 1 draftsman. It was reduced by death, transfers, and resignations amounting to 12. With these changes the technical force now includes a chief geographer, 9 geographers, 40 topographers, 38 assistant topographers, 4 topographic aids, 20 junior topographers, and 4 draftsmen. Four of the topographers and 1 geographer are on leave without pay. In addition to the above regular force 167 technical field assistants were employed during the whole or a part of the field season.

SUMMARY OF RESULTS.

The condition of topographic surveys to July 1, 1908, distinguished as to scale, etc., is shown on Pl. II.

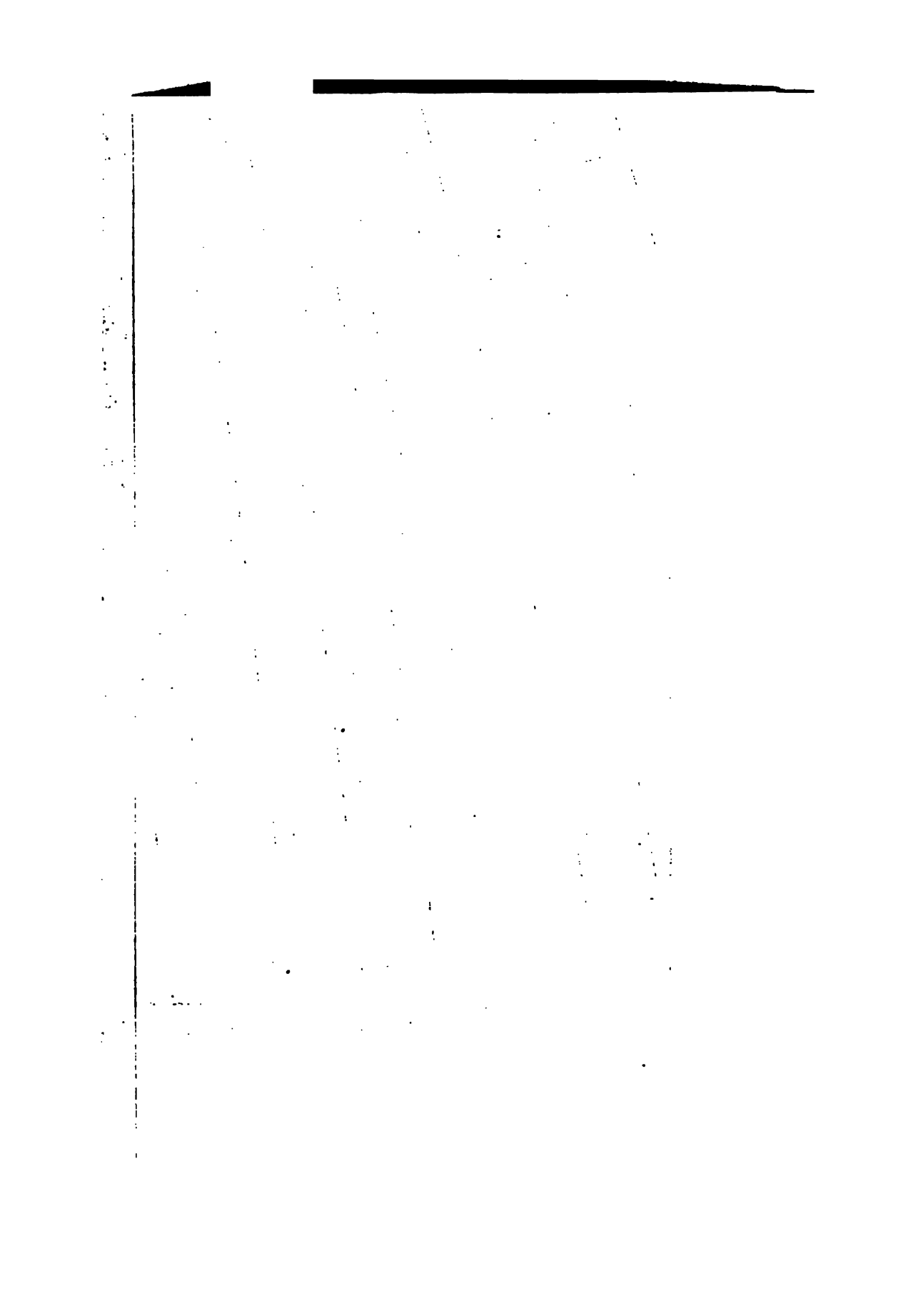
As shown in the following tables, which give the details of topographic mapping and spirit leveling for the fiscal year, the total area mapped was 25,658 square miles, making the total area surveyed to date in the United States 1,051,126 square miles, or about 35 per cent. In addition, 6,979 square miles of revision or resurvey were completed, making the total area of actual surveys for the season 32,637 square miles.

Triangulation and primary-traverse stations to the number of 504 were occupied, located, and marked and 19 were intersected, and 3,468 miles of primary traverse were run. In the course of this work 35,325 square miles were covered by primary control.

In connection with these surveys 7,543 linear miles of primary levels and 843 miles of precise levels were run, making the total amount of primary and precise spirit leveling done since the authorization of this work by Congress, in 1896, 212,149 miles.

The area covered by topographic surveys in Alaska during the fiscal year 1907–8, as reported in detail on pages 40–43, was about 6,626 square miles, 501 of which were mapped for publication on the scale of 1:62,500 and 6,125 for publication on the scale of 1:250,000.

APHIC SURVEYS



The results of primary triangulation and primary traverse in all States in which field work was in progress were summarized and prepared for publication as a bulletin.

Present condition of topographic surveys of the United States and new areas surveyed in 1907–8.

State or Territory.	New area surveyed in 1907–8.	Total area surveyed to July 1, 1908.	Percentage of total area of State surveyed to July 1, 1908.
	Sq. miles.	*Sq. miles.*	
Alabama	.....	18,283	35
Arizona	250	62,962	55
Arkansas	.....	20,469	38
California	2,998	82,379	52
Colorado	1,130	38,896	37
Connecticut	.....	4,965	100
Delaware	.....	1,008	43
District of Columbia	.....	70	100
Florida	.....	1,821	3
Georgia	232	17,087	29
Idaho	162	15,358	18
Illinois	771	8,171	14
Indiana	160	2,618	7
Iowa	197	10,092	18
Kansas	.....	64,159	78
Kentucky	1,330	15,845	39
Louisiana	.....	7,923	16
Maine	380	7,185	22
Maryland	.....	10,294	84
Massachusetts	.....	8,266	100
Michigan	491	4,244	7
Minnesota	211	3,087	4
Mississippi	97	1,003	2
Missouri	229	34,246	49
Montana	1,788	48,977	33
Nebraska	.....	25,974	34
Nevada	3,739	44,221	40
New Hampshire	216	3,376	36
New Jersey	.....	8,224	100
New Mexico	1,255	29,990	24
New York	599	38,808	79
North Carolina	344	17,418	33
North Dakota	144	8,919	13
Ohio	3,070	23,067	56
Oklahoma	1,168	37,663	54
Oregon	1,053	17,333	18
Pennsylvania	1,421	21,029	47
Rhode Island	.....	1,248	100
South Carolina	144	5,640	18
South Dakota	.....	17,956	23
Tennessee	242	20,345	48
Texas	469	66,314	25
Utah	.....	63,320	75
Vermont	.....	3,537	37
Virginia	151	29,980	70
Washington	170	18,398	27
West Virginia	.....	24,120	99.8
Wisconsin	176	11,373	20
Wyoming	871	23,465	24
	25,658	1,051,126	.....

ATLANTIC DIVISION.

FIELD WORK.

SUMMARY.

During the season topographic mapping was carried on in Alabama, Georgia, Kentucky, Maine, Maryland, Mississippi, New Hampshire, New York, North Carolina, South Carolina, Ohio, Penn-

sylvania, Tennessee, Virginia, and West Virginia. This work comprised the survey of 33 quadrangles and the resurvey or revision of 11 quadrangles and 1 special area. In addition, 18 quadrangles were partly surveyed and 5 quadrangles partly resurveyed. The total new area mapped was 8,226 square miles—8,129 square miles for publication on the scale of 1:62,500, and 97 square miles for publication on the scale of 1:31,680. The area resurveyed was 3,046 square miles—248 for publication on the scale of 1:125,000, 2,710 for publication on the scale of 1:62,500, and 88 for publication on the scale of 1:36,000. In connection with this work 2,993 miles of primary levels and 304 miles of precise levels were run and 898 permanent bench marks were established.

Primary triangulation, primary traverse, and precise leveling were carried on at various times by eight parties. This work was distributed over portions of Alabama, Kentucky, Maine, Maryland, Mississippi, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia. The total area covered by this primary control was about 8,550 square miles, of which 6,300 square miles were controlled by primary traverse. The result of this work was to make control available in forty-one 15-minute quadrangles.

Topographic surveys in Atlantic division from June 1, 1907, to July 1, 1908.

State.	Contour interval.	For publication on scale of—			Total area surveyed.	Levels.	
		1:125,000.		1:62,500.		Distance run.	Bench marks.
		Resurvey.	New.	Resurvey.			
	Feet.	*Sq. miles.*	*Sq. miles.*	*Sq. miles.*	*Sq. miles.*	*Miles.*	
Alabama	50	248	.....	145	393	31	31
Georgia	20-50	.....	232	247	[a] 501	96	28
Kentucky	20	.....	1,330	.....	1,330	483	86
Maine	20	.....	380	.....	380	82	28
Maryland	20	.....	.....	684	684	101	26
Mississippi	.....	.....	.....	.....	[b] 97	246	65
New Hampshire	20	.....	216	.....	216	.....	.....
New York	20	.....	599	.....	599	231	57
North Carolina	20	.....	344	.....	[a] 349	.....	.....
Ohio	20	.....	3,070	.....	3,070	965	298
Pennsylvania	20	.....	1,421	58	1,479	456	117
South Carolina	20	.....	144	.....	144	.....	.....
Tennessee	20	.....	242	.....	[a] 303	72	14
Virginia	20-50	.....	151	72	223	53	10
West Virginia	50	.....	.....	1,504	1,504	481	143
		248	8,129	2,710	11,272	3,297	898

[a] 88 square miles of resurvey, 5 in North Carolina, 22 in Georgia, 61 in Tennessee, for publication on the scale of 1:36,000.
[b] 97 square miles in Mississippi for publication on scale of 1:31,680.

DETAILS OF WORK BY STATES.

Alabama.—The resurvey of the Opelika quadrangle, in Chambers and Lee counties, was completed by R. W. Berry, 248 square miles being mapped for publication on the scale of 1:125,000, with a con-

tour interval of 50 feet. The resurvey of the Montevallo quadrangle, in Shelby, Chilton, and Bibb counties, was commenced by Mr. Berry, 145 square miles being completed, for publication on the scale of 1:62,500, with a contour interval of 50 feet. For the control of these and adjoining areas 31 miles of primary levels were run and 31 permanent bench marks were established by A. K. Gilman and J. B. Metcalf. The control of the Seale quadrangle, in Lee and Russell counties, was completed by F. J. McMaugh, who ran 38 miles of primary traverse.

Georgia.—The resurvey of the Acworth quadrangle, in Cherokee, Bartow, and Cobb counties, and the survey of the Columbus quadrangle, in Chattahoochee and Muscogee counties, were completed by Duncan Hannegan. The total area resurveyed was 247 square miles and the new area surveyed was 232 square miles, all for publication on the scale of 1:62,500, with contour intervals of 20 and 50 feet. For the control of the Columbus quadrangle 96 miles of primary levels were run and 28 permanent bench marks were established by J. B. Metcalf.

Kentucky.—For the continuation of cooperative topographic surveys the state geologist allotted $8,000 and the federal Survey allotted a like sum. The Providence, Earlington, Madisonville, Central City, Hartford, and Whitesville quadrangles, in Webster, Hopkins, Caldwell, Crittenden, Daviess, Ohio, Hancock, McLean, Muhlenberg, and Butler counties, were completed by Van. H. Manning, A. O. Burkland, C. C. Gardner, R. L. Harrison, T. H. Moncure, and R. W. Berry. The total area surveyed was 1,330 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of these quadrangles 408 miles of primary spirit levels were run and 61 permanent bench marks were established by H. W. Peabody and G. W. Crane, and in addition 178 miles of primary traverse were run and 10 stations established by C. B. Kendall. A line of precise levels 75 miles in length was run by W. H. Monahan from Center along the Illinois Central Railroad to Cerulean Springs, crossing Caldwell, Crittenden, Elmore, and Trigg counties, and furnishing control for the Eddyville, Marion, Morganfield, Princeton, Providence, and Shawneetown quadrangles. In connection with this line 25 permanent bench marks were established.

Maine.—For the continuation of cooperative topographic surveys in Maine the State Survey Commission allotted $2,500 and the United States Geological Survey allotted a like sum. The survey of the Eastport quadrangle, in Washington County, and the Poland quadrangle, in Androscoggin, Oxford, and Cumberland counties, was completed, and that of the Ellsworth quadrangle, in Hancock County, was commenced. This work was done by Hersey Munroe, R. Purington, and F. E. Matthes, the total area surveyed being 380 square miles,

for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of the Eastport quadrangle 82 miles of primary levels were run and 23 permanent bench marks were established by H. M. Gilman, jr. The Ellsworth quadrangle, in Hancock County, was controlled by S. S. Gannett by means of triangulation, 5 stations being occupied and 2 points located by intersections.

Maryland.—For the continuation of cooperative topographic surveys in Maryland the state geologist allotted $5,000 and the federal Survey allotted $4,000. The resurvey of the Ijamsville and Mount Airy quadrangles and the Maryland portion of the Seneca quadrangle was completed, and that of the Middletown and Taneytown quadrangles was commenced. The total area resurveyed was 684 square miles, in Montgomery, Frederick, Carroll, Howard, and Jefferson counties, for publication on the scale of 1:62,500, with a contour interval of 20 feet. This work was done by W. Carvel Hall, J. H. Wheat, Fred Graff, E. W. McCrary, J. S. B. Daingerfield, J. D. Forster, L. C. Fletcher, and S. P. Floore. For the control of these and adjacent areas 101 miles of primary levels were run and 26 permanent bench marks were established by W. R. Winstead and J. E. McCorkle. The Emmitsburg and Taneytown quadrangles, in Frederick, Carroll, and Montgomery counties, and the Seneca quadrangle, in Montgomery County, Md., and Fairfax County, Va., were controlled by 119 miles of primary traverse run and 9 stations established by F. J. McMaugh.

Mississippi.—For cooperative topographic surveys in Mississippi the state Geological Survey and the United States Geological Survey each allotted $1,600. An irregular area of 323 square miles in the vicinity of Clarksdale, in Coahoma, Bolivar, Quitman, Tallahatchie, Panola, and Tunica counties, was controlled, under the direction of C. D. S. Clarkson, by 80 miles of primary levels run by J. E. McCorkle and W. W. Boone, who established 18 permanent bench marks; and by 158 miles of primary traverse and 15 stations established by F. J. McMaugh and C. A. Clunet.

On May 11 a tentative agreement was entered into with the governor of the State and the president of the Tallahatchie drainage commission, which empowered the federal Survey to undertake the mapping of the Tallahatchie drainage district. On June 15 a final agreement was made which provided that the Geological Survey should expend $9,000 for this work and the Tallahatchie drainage commission $27,000, more or less, to complete the survey of the district. Work was commenced by Van. H. Manning, E. P. Davis, R. L. Harrison, C. C. Gardner, and J. R. McMillen on the Belen, Coahoma, and Evansville quadrangles, in Coahoma, Quitman, and Tunica counties, the survey of 97 square miles being completed, for publication on the scale of 1:31,680, with a contour interval of 5 feet. For

the control of this district 101 miles of primary and 65 miles of precise levels were run by L. L. Lee, C. C. Gardner, and W. H. Monahan, in connection with which 47 permanent bench marks were established and 172 miles of primary traverse were run and 58 stations established by F. J. McMaugh and C. A. Clunet.

Alabama-Mississippi-Tennessee.—The Iuka quadrangle, in Colbert and Lauderdale counties, Ala., Tishomingo County, Miss., and Hardin County, Tenn., was controlled by 84 miles of primary traverse run by F. J. McMaugh.

New Hampshire.—The survey of the Lake Winnipesaukee quadrangle, in Belknap and Carroll counties, was completed by J. I. Gayetty, for publication on the scale of 1:62,500, with a contour interval of 20 feet, the area mapped being 216 square miles.

New York.—The state engineer and surveyor allotted $8,000 for the continuation of the cooperative topographic survey of the State, and the federal Survey allotted a like amount for the same purpose. The work on the Cooperstown quadrangle, in Otsego County, and the Stony Creek quadrangle, in Warren, Hamilton, and Saratoga counties, was completed; that on the Delhi quadrangle, in Otsego and Delaware counties; the Neversink quadrangle, in Sullivan and Ulster counties; and the Bath quadrangle, in Steuben County, was partly completed. This work was done by C. E. Cooke, W. H. S. Morey, Fred Graff, jr., W. M. Beaman, J. I. Gayetty, L. C. Fletcher, J. M. Whitman, and S. P. Floore, the area surveyed being 599 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of these and adjoining areas 231 miles of primary levels were run and 57 permanent bench marks were established by C. H. Semper.

North Carolina.—The survey of the Great Coharie quadrangle, in Sampson County, was completed by Albert Pike, the area mapped being 244 square miles.

North Carolina-South Carolina.—The survey of the Gaffney quadrangle, in Cleveland County, N. C., and Cherokee County, S. C., was completed by W. L. Miller and L. L. Lee. The area surveyed was 244 square miles, 100 of which are in North Carolina, for publication on the scale of 1:62,500, with a contour interval of 20 feet.

Ohio.—The governor of Ohio allotted $19,000 for the continuation of the cooperative topographic survey of the State, and a like sum was set apart for the same purpose by the United States Geological Survey. The survey of the Ottawa, McClure, Napoleon, Continental, and Defiance quadrangles, in Defiance, Williams, Lucas, Paulding, Putnam, Henry, Wood, and Fulton counties; the Newark, Thurston, Thornville, Logan, and Lancaster quadrangles, in Licking, Knox, Muskingum, Pickaway, Fairfield, Perry, and Hocking counties; and the Alliance, Lisbon, and Columbiana quadrangles, in Stark, Colum-

biana, and Mahoning counties, was completed, and that of the Frazeysburg, Conesville, Zanesville, New Lexington, and Granville quadrangles, in Coshocton, Morgan, Perry, Hocking, Athens, Muskingum, and Licking counties, was commenced. This work was done by J. H. Jennings, R. C. McKinney, W. H. S. Morey, R. D. Cummin, W. H. Monahan, J. S. B. Daingerfield, C. W. Goodlove, J. M. Whitman, I. M. Flocker, J. A. Duck, and W. H. Lovell, the area surveyed being 3,070 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of these and adjacent areas 965 miles of primary levels were run and 298 permanent bench marks were established by C. H. Semper, R. C. Seitz, C. H. Burns, W. H. Monahan, I. M. Flocker, and E. C. Bibbee. The Coshocton, Brinkhaven, Caldwell, McConnellsville, New Lexington, Millersburg, and Plimpton quadrangles, in Holmes, Wayne, Ashland, Coshocton, Knox, Washington, Morgan, and Perry counties, were controlled by 299 miles of primary traverse run and 28 stations established by C. B. Kendall.

Pennsylvania.—The Geologic and Topographic Survey Commission of Pennsylvania allotted $11,500 for the continuance of cooperative topographic surveys of the State, and the United States Geological Survey allotted a like sum for the same purpose. The survey of the Shenango quadrangle, in Mercer and Crawford counties; the Smicksburg quadrangle, in Jefferson, Armstrong, and Indiana counties; the Foxburg quadrangle, in Venango, Clarion, Butler, and Armstrong counties; the Gettysburg quadrangle, in Adams and York counties, and the Freeport quadrangle, in Armstrong, Butler, Allegheny, and Westmoreland counties, was completed; and that of the York quadrangle, in York County; the Zelionople quadrangle, in Butler and Lawrence counties; the Bedford quadrangle, in Bedford, Somerset, and Cambria counties; the Fairfield quadrangle, in Adams County, and the New Kensington quadrangle, in Butler and Allegheny counties, was commenced. This work was done by J. H. Jennings, C. W. Goodlove, Hersey Munroe, J. M. Whitman, W. O. Tufts, R. H. Reineck, L. C. Fletcher, J. H. Wheat, J. S. B. Daingerfield, A. O. Burkland, J. D. Forster, and R. W. Berry, the total area surveyed being 1,421 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. In addition, the work on 58 square miles of the Sewickley quadrangle was revised. For the control of these and adjoining areas 456 miles of primary levels were run and 117 permanent bench marks were established by C. H. Semper, H. D. Hilton, and C. H. Burns. The Bellefonte and Philipsburg quadrangles, in Center and Clearfield counties; the McCall Ferry and Quarryville quadrangles, in Lancaster and York counties; and the Franklin, Hilliards, Mercer, and Stoneboro quadrangles, in Butler, Crawford, Mercer, Lawrence, and Venango counties, were controlled

by 411 miles of primary traverse run and 30 stations established by F. J. McMaugh and C. B. Kendall. The Berlin, Meyersdale, Confluence, Hyndman, and Somerset quadrangles, in Somerset, Fayette, Bedford, and Westmoreland counties, were partly controlled by triangulation by G. T. Hawkins, who occupied 9 stations.

Tennessee.—The survey of the Franklin quadrangle, comprising an area of 242 square miles in Williamson and Maury counties, was completed by Oscar Jones, for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of this area 19 miles of primary levels were run and four permanent bench marks were established. Mr. Jones also ran 93 miles of primary traverse and established 4 stations for the control of the Hollow Springs quadrangle, in Coffee, Rutherford, Cannon, and Bedford counties.

Tennessee-North Carolina-Georgia.—The mapping of the Ducktown special area was completed by Oscar Jones, the area covered being 88 square miles, 5 of which are in Cherokee County, N. C., 22 in Fanning County, Ga., and 61 in Polk County, Tenn., for publication on the scale of 1:36,000, with a contour interval of 20 feet. For the control of this area Mr. Jones located 4 new stations by means of triangulation, and J. G. Martin and W. H. Gray ran 53 miles of primary levels, in connection with which 10 permanent bench marks were established.

Virginia.—The survey of the Eagle Rock quadrangle, in Botetourt, Alleghany, and Craig counties, was commenced by Albert Pike and T. H. Moncure; and the resurvey of the Virginia portion of the Seneca quadrangle, in Fairfax and Loudoun counties, was completed by W. Carvel Hall and J. D. Forster. The new area mapped was 151 square miles and the area resurveyed was 72 square miles—all for publication on the scale of 1:62,500, with contour intervals of 20 and 50 feet. For the control of these and adjacent areas 42 miles of primary levels were run and 10 permanent bench marks were established by R. S. Deemer and W. B. Winstead.

Virginia-West Virginia.—A line of precise levels was extended by C. H. Semper from the vicinity of Covington, Va., to Charleston, W. Va., 11 miles being in Virginia and 153 miles in West Virginia. The line extended along the Chesapeake and Ohio and the Kanawha and Michigan railways, passing across the Lewisburg, Hinton, Raleigh, Kanawha Falls, and Charleston quadrangles, in Alleghany County, Va., and Greenbrier, Summers, Fayette, and Kanawha counties, W. Va. The work in West Virginia was done in cooperation with the State.

West Virginia.—For the continuation of cooperative topographic surveys in West Virginia the state geologist allotted $12,000 and the federal Survey allotted an equal sum. The resurvey resulted in the completion of the work on the Elkins quadrangle, in Randolph

and Barbour counties, and the Wayne, Midkiff, St. Albans, Charleston, and Clendennin quadrangles, in Wayne, Lincoln, Kanawha, Putnam, Clay, and Logan counties, and the commencement of the work on the Clay quadrangle, in Clay and Nicholas counties. This work was done by E. I. Ireland, J. R. Eakin, S. P. Floore, T. F. Slaughter, J. I. Gayetty, and P. W. McMillen, the area surveyed being 1,504 square miles, for publication on the scale of 1:62,500, with a contour interval of 50 feet. For the control of these and adjoining quadrangles, 328 miles of primary levels were run and 86 permanent bench marks were established by C. H. Semper, O. N. Meredith, C. K. Alexander, and E. S. Dawson. The Clendennin and Clay quadrangles, in Clay, Kanawha, and Nicholas counties, and the Horton and Elkins quadrangles, in Randolph and Tucker counties, were controlled by D. H. Baldwin, who located 12 new stations by triangulation. The Montgomery, Winifrede, and Fayetteville quadrangles, in Boone, Fayette, Kanawha, Clay, and Nicholas counties, were partly controlled by R. H. Chapman, assisted by P. W. McMillen, who occupied 3 stations.

Porto Rico.—In compliance with a request from the Forest Service for an immediate survey of the boundary of the Luquillo National Forest, the work was commenced in March and completed early in June by E. M. Douglas, geographer, in charge of party, and C. L. Nelson, assistant topographer, 40.2 miles of line having been surveyed and marked by 98 concrete, stone, or wooden posts. In order to locate the corners of the reserve two United States Coast and Geodetic Survey triangulation stations were occupied and four new stations were selected, marked, and occupied. In addition to an accurate contour sketch of a narrow strip along the entire boundary, a reconnaissance sketch of 54 square miles of the reserve was made by Mr. Nelson.

OFFICE WORK.

The drafting of the following sheets was completed: Opelika, Ala.; Acworth and Columbus, Ga.; Providence, Hartford, Earlington, Madisonville, Central City, and Whitesville, Ky.; Eastport and Poland, Me.; Seneca, Ijamsville, and Mount Airy, Md.; Lake Winnepesaukee, N. H.; Cooperstown, N. Y.; Great Coharie and Gold Hill, N. C.; Gaffney, N. C.-S. C.; Newark, Logan, Lancaster, Columbiana, Lisbon, Alliance, Thurston, Napoleon, Continental, McClure, Ottawa, Thornville, and Defiance, Ohio; Gettysburg, Shenango, Foxburg, Freeport, and Smicksburg, Pa.; Franklin and Ducktown special, Tennessee; Charleston, St. Albans, Clendennin, Elkins, Wayne, and Midkiff, W. Va.

Progress in the drafting of additional sheets was made as follows: Middletown, Md., 5 per cent; Stoney Creek, N. Y., 38 per cent; Eagle Rock, Va., 60 per cent.

In the triangulation and computing section the following computations were made:

For the control of the Seale (Ala.) quadrangle, 262 latitudes and departures and 35 geographic positions were computed. Level circuits in the same area were adjusted.

For the control of the Madisonville, Earlington, Central City, and Hartford (Ky.) quadrangles, 1,622 latitudes and departures and 182 geographic positions were computed. For the control of the Princeton, Dawson Springs, Greenville, and White Plains (Ky.) quadrangles, 1,317 latitudes and departures and 159 geographic positions were computed. Level circuits were adjusted in the same area.

The geodetic positions of six triangulation points for the control of the Ellsworth (Me.) quadrangle were computed. Level circuits in the Eastport, Poland, Lewiston, and Cutler (Me.) quadrangles were adjusted.

For the control of the Emmitsburg, Taneytown, and Seneca quadrangles (Md.-Va.), 853 latitudes and departures and 123 geographic positions were computed. Level circuits in these areas and also in the Middletown (Md.) quadrangle were adjusted.

For the control of the Friars Point and Clarksdale (Miss.) quadrangles, 495 latitudes and departures and 84 geographic positions were computed. Level circuits in the same area were adjusted.

For the control of the Iuka (Miss.-Ala.-Tenn.) quadrangle, 1,071 latitudes and departures and 77 geographic positions were computed.

Level circuits were adjusted in the Bath, Delhi, and Monticello (N. Y.) quadrangles.

For the control of the Millersburg, Plimpton, Coshocton, Brinkhaven, Caldwell, McLean, and New Lexington (Ohio) quadrangles, 2,565 latitudes and departures and 320 geographic positions were computed. Level circuits throughout Ohio were readjusted on the basis of the 1907 adjustment of the precise-level net as made by the Coast and Geodetic Survey.

For the control of the Bellefonte, McCall Ferry, and Quarryville (Pa.) quadrangles, 2,274 latitudes and departures and 242 geographic positions were computed. Level circuits in the Butler, Smicksburg, Bedford, Brookville, and York (Pa.) quadrangles were adjusted.

For the control of the Ducktown (Tenn.-N. C.-Ga.) special quadrangle the final geodetic positions of four triangulation points were computed and level circuits in the same vicinity were adjusted.

The office computation of the precise-level line extending from Covington, Va., to Charleston, W. Va., was made.

The geodetic positions of 12 triangulation stations, located for the control of the Clendennin, Clay, Horton, and Elkins (W. Va.) quadrangles, were computed. Level circuits on the Midkiff, Wayne, Clendennin, and Elkins (W. Va.) quadrangles were adjusted.

CENTRAL DIVISION.

FIELD WORK.

SUMMARY.

During the season topographic surveying was carried on in Arkansas, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Oklahoma, Texas, and Wisconsin. The survey of 14 quadrangles and the resurvey of 2 quadrangles were completed. In addition, 13 quadrangles were partly surveyed and the resurvey of one quadrangle and one special area was partly completed. The total new area mapped was 3,872 square miles—3,002 for publication on the scale of 1:62,500 and 870 for publication on the sale of 1:125,000. The area resurveyed was 843 square miles—625 for publication on the scale of 1:62,500 and 218 for publication on the scale of 1:24,000. In connection with this work, 2,049 miles of primary levels and 331 miles of precise levels were run and 564 permanent bench marks were established.

Primary traverse and precise leveling were carried on at various times by seven parties, the work being distributed over portions of Arkansas, Illinois, Indiana, Iowa, Michigan, Missouri, Oklahoma, Wisconsin, and Texas. The total area covered by primary traverse was 6,075 square miles, furnishing control in one 30-minute and thirty-one 15-minute quadrangles.

Topographic surveys in central division from June 1, 1907, to July 1, 1908.

State.	Contour interval.	For publication on scale of—			Total area surveyed.	Levels.	
		1:125,000.	1:62,500.			Distance run.	Bench marks.
		New.	New.	Resurvey.			
	Feet.	*Sq. miles.*	*Sq. miles.*	*Sq. miles.*	*Sq. miles.*	*Miles.*	
Arkansas						63	16
Illinois	20		771		771	694	141
Indiana	20		160		160	65	21
Iowa	20		197		197	99	20
Kansas	20				[a]89	3	
Michigan	20		491		491	258	77
Minnesota	20		211		211	584	94
Missouri	20		229	407	[a]765	163	31
Oklahoma	20–50	401	767		1,168	241	95
Texas	20	469			469	217	61
Wisconsin	20		176	218	394	43	8
		870	3,002	625	4,715	2,380	564

[a] 218 square miles of resurvey (89 in Kansas and 129 in Missouri) for publication on the scale of 1:24,000.

DETAILS OF WORK BY STATES.

Arkansas.—For the control of the De Queen quadrangle, in Sevier, Polk, and Howard counties, W. A. Gelbach ran 63 miles of primary levels and established 16 permanent bench marks, and J. R. Ellis ran 119 miles of primary traverse and occupied 11 stations.

Illinois.—The governor of Illinois allotted $8,000 for the continuation of cooperative topographic surveys in the State, and the United States Geological Survey allotted a like sum for the same purpose. The survey of the Tallula quadrangle, in Morgan, Sangamon, Cass, and Menard counties; the Herrin quadrangle, in Jackson, Perry, Franklin, and Williamson counties; and the West Frankfort quadrangle, in Franklin and Williamson counties, was completed; and that of the Carlyle, New Athens, and Okawville quadrangles, in St. Clair, Washington, Clinton, and Bond counties; the Hardinville quadrangle, in Jasper, Crawford, Richland, and Lawrence counties; and the Vandalia quadrangle, in Fayette County, was commenced. This work was done by W. J. Lloyd, E. W. McCrary, J. F. McBeth, H. L. McDonald, Lee Morrison, and J. E. Tichenor, the total area surveyed being 771 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of these and adjacent areas 662 miles of primary levels were run and 129 permanent bench marks were established by W. J. Lloyd, W. A. Gelbach, and Henry Bucher, and 236 miles of primary traverse were run and 22 stations established by J. R. Ellis. The Lasalle and Hennepin quadrangles, in Lasalle, Bureau, and Putnam counties, were controlled by 104 miles of primary traverse run and 5 stations established by C. B. Kendall. A line of precise levels 32 miles in length, extending from the vicinity of Terre Haute, Ind., to Oakland, Ill., through the Paris and Kansas quadrangles, in Edgar County, was run by C. H. Semper, and in connection with this work 12 permanent bench marks were established.

Indiana.—The survey of the Bloomington quadrangle, in Munroe, Owen, and Greene counties, was commenced by W. H. Griffin and C. L. Sadler, the area covered being 140 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. A line of precise levels 57 miles in length was extended by C. H. Semper through the Bloomfield, Jasonville, and Saline City quadrangles, in Clay and Vigo counties, and in connection with this work 19 permanent bench marks were established. Mr. Sadler also ran 8 miles of primary levels and established two permanent bench marks for the control of the same general area.

Iowa.—The state geologist allotted $1,750 for cooperative topographic surveys in Iowa and the federal Survey allotted a like sum for the same purpose. The survey of the Milo quadrangle, in Warren and Marion counties, was commenced by J. G. Staack and A. T. Fowler, the area covered being 197 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of this area 76 miles of primary traverse were run and 7 stations established by J. R. Ellis, and 99 miles of primary levels were run and 20 permanent bench marks were established by W. A.

Gelbach. For the control of the Knoxville and Pella quadrangles, in Marion and Mahaska counties, Mr. Ellis ran 72 miles of primary traverse and established 7 stations.

Kansas-Missouri.—The resurvey of an area already covered by reconnaissance maps—the Fort Leavenworth special quadrangle, in Leavenworth County, Kans., and Platte County, Mo.—was commenced by Glenn S. Smith, Arthur Stiles, and J. G. Staack, the area completely surveyed being 218 square miles, 129 of which are in Missouri, for publication on the scale of 1:24,000, with a contour interval of 20 feet. In connection with this work 6 miles of primary levels, 3 being in Missouri, were run and 1 permanent bench mark was established by A. J. Ogle.

Michigan.—For the continuation of cooperative topographic surveys in Michigan the state geologist and the United States Geological Survey each allotted $3,000. The survey of the Howell and Milford quadrangles was completed and that of the Durand and Fowlerville quadrangles was commenced by A. M. Walker and C. D. S. Clarkson, the total area surveyed being 491 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. This area lies in Livingston, Oakland, Shiawassee, Genesee, and Ingham counties. For the control of these quadrangles and adjacent areas 258 miles of primary levels were run and 77 permanent bench marks were established by C. B. Kendall and Frank H. West. The Calumet special quadrangle, in Houghton and Keweenaw counties, and the Fowlerville and Mason quadrangles, in Livingston and Ingham counties, were controlled by 191 miles of primary traverse run and 37 stations established by J. R. Ellis.

Minnesota.—The survey of the Rockford quadrangle, in Hennepin and Wright counties, was completed by J. G. Staack, the area surveyed being 211 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of this quadrangle 74 miles of primary levels were run and 15 permanent bench marks were established by Edward Bandli.

Missouri.—For the continuation of cooperative topographic surveys in Missouri the state geologist and the United States Geological Survey each allotted $5,000. The resurvey of the Ste. Genevieve quadrangle was continued, which resulted in the completion of the Weingarten quadrangle, in Ste. Genevieve and Perry counties, by C. G. Anderson, and the survey of the Higdon quadrangle, in the same region, was commenced. The survey of the Macon quadrangle, in Macon, Shelby, Monroe, and Randolph counties, was commenced by Merrill Hackett. The total area resurveyed was 407 square miles and the new area surveyed was 229 square miles, all for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of these and adjacent areas 134 miles of primary levels were

run and 22 permanent bench marks were established by Edward Bandli; and 164 miles of primary traverse were run and 14 stations established by J. R. Ellis. The Sullivan quadrangle, in Franklin and Crawford counties, was controlled by 26 miles of precise levels by E. L. McNair, who set 8 permanent bench marks.

Oklahoma.—The governor of Oklahoma and the United States Geological Survey each allotted $4,000 for the continuation of cooperative topographic surveys in that State. The work on the Luther, Merrick, Maud, and Shawnee quadrangles, in Lincoln, Logan, Oklahoma, Payne, Pottawatomie, and Seminole counties, was completed, and that on the Newalla and Burnett quadrangles, in Cleveland, Lincoln, Oklahoma, and Pottawatomie counties, was nearly completed. This work was done by C. L. Sadler, H. H. Hodgeson, and L. B. Roberts, the total area surveyed being 767 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of these and adjacent areas 241 miles of primary levels were run and 95 permanent bench marks were established by F. M. Hutchinson, and 194 miles of primary traverse were run and 30 stations established by J. R. Ellis. In addition to the cooperative work, the survey of the Wyandotte quadrangle, in the Cherokee Nation, was completed by C. G. Anderson and J. A. Duck, the total area surveyed being 401 square miles, for publication on the scale of 1:125,000, with a contour interval of 50 feet.

Texas.—The survey of the San Marcos quadrangle, in Caldwell, Hays, Comal, Gonzales, and Guadalupe counties, was completed by Fred McLaughlin, W. J. Forster, and D. B. Penick, the total area surveyed being 469 square miles, for publication on the scale of 1:125,000, with a contour interval of 20 feet. For the control of the Mount Pleasant, Bassett, Boxelder, and Daingerfield quadrangles, in Bowie, Red River, Morris, Cass, and Titus counties, 217 miles of primary levels were run and 61 permanent bench marks were established by W. A. Gelbach, and 98 miles of primary traverse were run by F. J. McMaugh.

Wisconsin.—The survey of the Cross Plains quadrangle, in Dane County, was completed by A. T. Fowler; that of the Sparta quadrangle, in Monroe and La Crosse counties, was completed by Merrill Hackett; and that of the Fond du Lac quadrangle, in Fond du Lac and Winnebago counties, was commenced by H. L. McDonald, the total area mapped being 176 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. The revision of the Oconomowoc quadrangle, covering 218 square miles in Waukesha, Dodge, and Washington counties, was completed by A. T. Fowler, for publication on the scale of 1:62,500, with a contour interval of 20 feet. The Fond du Lac and Menasha quadrangles, in Fond du Lac, Winnebago, and Calumet counties, and the Stoughton and

Waterloo quadrangles, in Dodge, Jefferson, Dane, and Polk counties, were partly controlled by J. R. Ellis, who ran 184 miles of primary traverse, and by H. L. McDonald, who ran 15 miles of levels. The De Soto quadrangle, in Franklin County, was partly controlled by E. L. McNair, who ran 28 miles of precise levels and established 8 permanent bench marks.

DRAINAGE SURVEYS IN MINNESOTA.

A further appropriation of $10,000 was made by Congress in the Indian act for the continuation of the survey of the swamp areas in the ceded lands of the Chippewas in Roseau, Beltrami, Marshall, Red Lake, and Koochiching counties, the work being assigned to the Geological Survey by the Secretary of the Interior. The work was prosecuted by A. P. Meade and E. L. McNair, and approximately 1,800 square miles were covered by a network of levels, 188 miles of precise levels and 272 miles of primary levels being run, in connection with which 79 permanent bench marks were established.

OFFICE WORK.

The drafting of the following sheets was completed: West Frankfort and Tallula, Ill.; Howell, Mich.; Rockford, Minn.; Weingarten and Wyandotte, Mo.; Perkins, Maud, Shawnee, and Luther, Okla.; New Boston, Texarkana, and Linden, Tex.; Cross Plains, Sparta, and Oconomowoc, Wis. Progress was made on the drafting of sheets as follows: Carlyle and Hardinville, Ill., and Macon, Mo., 50 per cent each; Burnett, Okla., 85 per cent; Bloomington, Ind., 47 per cent; Fort Leavenworth special, Kans.-Mo., 45 per cent; Milo, Iowa, 35 per cent.

In the triangulation and computing section the following computations were made:

For the control of the DeQueen (Ark.) quadrangle, 1,055 latitudes and departures and 100 geographic positions were computed.

For the control of the Hardinville, Okawville, New Athens, and Carlyle (Ill.) quadrangles, 913 latitudes and departures and 209 geographic positions were computed. The final computation of the precise-level line in Edgar County, Ill., was made. Level circuits were adjusted in the Okawville, New Athens, Baldwin, Carlyle, Hardinville, Herrin, and Murphysboro quadrangles, all in Illinois.

The final computation of the precise level line extending through Clay and Vigo counties, Ind., was made and primary-level circuits in the Bloomington (Ind.) quadrangle were adjusted.

For the control of the Milo (Iowa) quadrangle, 292 latitudes and departures and 55 geographic positions were computed. Level circuits in the same area were adjusted.

For the control of the Calumet (Mich.) special quadrangle, 554 latitudes and departures and 57 geodetic positions were computed.

Level circuits in the Howell and Milford (Mich.) quadrangles were adjusted.

Level circuits in the Rockford and Elk River (Minn.) quadrangles were adjusted.

For the control of the Edmond, Luther, Moore, Norman, Newalla, and Burnett (Okla.) quadrangles, 1,800 latitudes and departures and 212 geographic positions were computed. Level circuits in the same area were adjusted.

For the control of the Bassett, Boxelder, Daingerfield, and Mount Pleasant (Tex.) quadrangles, 816 latitudes and departures and 82 geographic positions were computed.

ROCKY MOUNTAIN DIVISION.

FIELD WORK.

SUMMARY.

During the season topographic surveying was carried on in Colorado, Montana, North Dakota, New Mexico, and Wyoming. The survey of 7 new quadrangles and of 2 special areas was completed; also the resurvey of 1 quadrangle and 1 special area. In addition 4 new quadrangles were partly surveyed and 3 were partly resurveyed. The total new area mapped was 5,188 square miles—3,804 for publication on the scale of 1:125,000, 1,347 for publication on the scale of 1:250,000, 35 for publication on the scale of 1:24,000, and 2 for publication on the scale of 1:12,000. The area resurveyed was 759 square miles for publication on the scale of 1:125,000. In connection with this work 510 miles of primary levels and 80 miles of precise levels were run and 161 permanent bench marks were established.

Triangulation and precise leveling were carried on by four parties. This work was distributed over Montana, New Mexico, and Wyoming, covering an area of about 5,400 square miles and furnishing control for nine 30-minute quadrangles and one special quadrangle.

Topographic surveys in Rocky Mountain division from June 1, 1907, to July 1, 1908.

State.	Contour interval.	For publication on scale of—			Total area surveyed.	Levels.	
		1:125,000.		1:250,000.		Distance run.	Bench marks.
		New.	Resurvey.	New.			
	Feet.	*Sq. miles.*	*Sq. miles.*	*Sq. miles.*	*Sq. miles.*	*Miles.*	
Colorado	50–100	1,130	615	.....	[a] 1,817	213	70
Montana	50–100	585	20	1,203	1,808	110	31
New Mexico	100	1,218	.....	.....	[b] 1,255	252	55
North Dakota	50	.....	.....	144	144	.....	.....
Wyoming	100	871	124	.....	995	15	5
		3,804	759	1,347	6,019	590	161

[a] 72 square miles of resurvey in Colorado for publication on the scale of 1:48,000.
[b] In New Mexico 35 square miles for publication on the scale of 1:24,000 and 2 square miles for publication on the scale of 1:12,000.

DETAILS OF WORK BY STATES.

Colorado.—The survey of the Livermore quadrangle, in Larimer County, was completed, and that of the Eaton quadrangle, in Larimer and Weld counties, was commenced by Frank Tweedy, Dave Winbray, H. S. Starr, and G. W. Lucas, the area covered being 267 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. The resurvey of areas in El Paso, Fremont, and Teller counties was continued by R. T. Evans, D. F. C. Moor, and H. R. Elliott, and resulted in the completion of the work on the Colorado Springs quadrangle and the Pikes Peak special area, the former including 575 square miles, surveyed for publication on the scale of 1:125,000, with a contour interval of 100 feet, and the latter 72 square miles, for publication on the scale of 1:48,000, with a contour interval of 50 feet. A special line of levels was run from a bench mark at Manitou to the top of Pikes Peak for the purpose of accurately establishing the elevation of the peak, 20 miles of levels being run and 10 permanent bench marks established by Charles Hartmann, jr. The survey of the Ignacio quadrangle, in the San Juan National Forest, in La Plata County, was completed by Frank Tweedy, Gilbert Young, and Lee Morrison. This area includes the Durango quadrangle, the total new area mapped being 713 square miles. In connection with this work the mapping of 40 square miles of the Engineer Mountain quadrangle was revised by Mr. Tweedy. The survey of the Mount Jackson quadrangle, in the Holy Cross National Forest, in Pitkin and Eagle counties, was commenced by Fred McLaughlin and D. F. C. Moor, the area surveyed being 150 square miles. This work was done for publication on the scale of 1:125,000, with a contour interval of 100 feet. For the partial control of the Eaton quadrangle 24 miles of primary levels were run and 7 permanent bench marks were established by W. R. Winstead. For the control of the Ignacio quadrangle and adjacent areas 70 miles of primary levels were run and 23 permanent bench marks were established by F. A. Nussle. For the partial control of the Cebolla quadrangle, in Gunnison and Hinsdale counties, 19 miles of primary levels were run and 5 permanent bench marks were established by R. T. Thompson. For the control of the Breckenridge special quadrangle, in Summit County, a line of precise levels was begun by C. H. Semper, 80 miles being run and 25 permanent bench marks established. D. F. C. Moor also occupied 8 stations by triangulation for the control of the same area.

Montana.—The survey of the Sapphire quadrangle, in the Hellgate National Forest, was completed, and that of the Missoula quadrangle, in the Lolo National Forest, was commenced by J. F. McBeth, J. E. Tichenor, W. J. Forster, and Arthur Stiles, the total area

surveyed being 492 square miles in Granite, Ravalli, and Missoula counties, for publication on the scale of 1:125,000, with a contour interval of 100 feet. Mr. McBeth also revised 20 square miles of the Philipsburg quadrangle, in Granite County. For the control of the Missoula quadrangle 84 miles of primary levels and 27 permanent bench marks were established by N. W. Pilger. The survey of the Nyack quadrangle, in the Lewis and Clark National Forest, in Flathead County, was commenced by Arthur Stiles, the area surveyed being 93 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. For the control of this area 26 miles of primary levels and 4 permanent bench marks were established by Charles Hartmann, jr.

Montana-North Dakota.—The survey of the Glendive quadrangle, in Dawson County, Mont., and Billings County, N. Dak., was completed by D. F. C. Moor, the total area surveyed being 1,347 square miles, for publication on the scale of 1:250,000, with a contour interval of 50 feet, 144 square miles being in North Dakota. Additional control for the Glendive quadrangle was obtained by Mr. Moor, who located 7 points by means of triangulation.

New Mexico.—The survey of the Gallina quadrangle, in the Jemez National Forest, in Rio Arriba County, was completed by Gilbert Young, Lee Morrison, and S. T. Penick, the total area surveyed being 250 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. In connection with this work 11 miles of primary levels were run and 3 permanent bench marks were established by F. A. Nussle. The survey of the Silver City and Santa Rita special quadrangles, in the Gila and Big Burro national forests, in Grant County, was completed by A. B. Searle, J. H. Sinclair, Gilbert Young, S. T. Penick, Charles Hartmann, jr., Frank Tweedy, and D. F. C. Moor, the former consisting of 968 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet, and the latter of 35 square miles, for publication on the scale of 1:24,000, with a contour interval of 20 feet. For the control of this work 214 miles of primary levels were run and 45 permanent bench marks were established by Victor Mindeleff. The survey of the Fort Bayard special quadrangle, in Grant County, consisting of 2 square miles, was completed by C. E. Cooke, for publication on the scale of 1:12,000, with a contour interval of 10 feet. For the control of this area Mr. Cooke occupied 10 stations by triangulation and Stuart T. Penick ran 27 miles of primary levels and established 7 permanent bench marks. The Silver City quadrangle was controlled by Fred McLaughlin, who located 9 new points by triangulation.

Wyoming.—The survey of the Grosventre quadrangle, in the Yellowstone National Forest, in Uinta and Fremont counties, was completed by T. M. Bannon, W. M. Kent, and W. S. Sargent, the area

surveyed being 871 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. Messrs. Bannon, Kent, and R. T. Evans also completed 124 square miles of revision on the Laramie quadrangle, in Albany County. The Hoback, Grays River, Cora, and Grosventre quadrangles, in Uinta County, were controlled by R. B. Robertson, who located 8 primary and 19 secondary triangulation points. For the control of the Rock Springs quadrangle, in Sweetwater County, J. D. Weems ran 15 miles of primary levels and established 5 permanent bench marks.

OFFICE WORK.

The drafting of the following sheets was completed: Livermore, Ignacio, Colorado Springs, and Pikes Peak special, Colorado; Glendive and Sapphire, Montana; Gallina, Silver City, and Santa Rita special, New Mexico; Grosventre and Medicine Bow, Wyoming. Progress amounting to 14 per cent was made in the drafting of the Laramie (Wyo.) sheet.

In the triangulation and computing section the following computations were made:

Level circuits in the Durango and Pagosa (Colo.) quadrangles were adjusted.

A least-square figure adjustment was made of the triangulation for the control of the Glendive (Mont.) quadrangle, and the final computation was made of the geodetic distances and positions of all stations within that area. The least-square adjustment and final computation of triangulation stations in the Blackfeet Indian Reservation were completed, and level circuits in the same area were adjusted.

The least-square adjustment of triangulation stations for the control of the Silver City (N. Mex.) quadrangle was made, and the final geodetic distances and positions of 9 stations were computed. Level circuits were adjusted in the Bloomfield, Dulce, Farmington, and Lumberton (N. Mex.) 30-minute quadrangles.

The least-square adjustment of the triangulation for the control of the Hoback, Grays River, Cora, and Grosventre (Wyo.) quadrangles, and the final computation of the geodetic positions of primary-traverse stations and of many of the secondary stations were made.

PACIFIC DIVISION.

FIELD WORK.

SUMMARY.

During the season topographic surveying was carried on in Arizona, California, Idaho, Nevada, Oregon, Utah, and Washington. The survey of 3 new quadrangles and 2 special areas and the resurvey of 15 quadrangles were completed. In addition 6 new quadrangles and

1 special area were partly surveyed and 10 quadrangles were partly resurveyed. The total new area mapped was 8,372 square miles—4,383 for publication on the scale of 1:125,000, 250 for publication on the scale of 1:62,500, and 3,739 for publication on the scale of 1:250,000. The area resurveyed was 2,331 square miles—1,441 for publication on the scale of 1:125,000, and 890 for publication on the scale of 1:62,500. In connection with this work 1,991 miles of primary levels and 128 miles of precise levels were run and 477 permanent bench marks were established. Primary control was carried on at various times by six parties. This work was distributed over portions of California, Idaho, Oregon, Utah, and Washington. The total area covered by this primary control is about 15,300 square miles, of which 450 square miles were controlled by primary traverse.

Topographic surveys in Pacific division from June 1, 1907, to July 1, 1908.

State.	Contour interval.	For publication on scale of—					Total area surveyed.	Levels.	
		1:125,000.		1:62,500.	1:250 000.	1:31,680.		Distance run.	Bench marks.
		New.	Resurvey.	New.	New.	Resurvey.			
	Feet.	*Sq. miles.*	*Sq. miles.*	*Sq. miles.*	*Sq. miles.*	*Sq. miles.*	*Sq. miles.*	*Miles.*	
Arizona	50–100	.....	579	250	.....	.....	829	155	54
California	5–10–100	2,998	.....	.....	.....	890	3,888	1,076	233
	100								
Idaho	100	162	.....	.....	.....	.....	162	287	62
Nevada	100	.....	.....	.....	3,739	.....	3,739	268	51
Oregon	50–100	1,053	.....	.....	.....	.....	1,053	224	53
Utah	100	.....	862	.....	.....	.....	862	40	8
Washington	50–100	170	.....	.....	.....	.....	170	69	16
		4,383	1,441	250	3,739	890	10,703	2,119	477

DETAILS OF WORK BY STATES.

Arizona.—A resurvey of the area covered by the San Francisco Mountains reconnaissance map, consisting of the Flagstaff quadrangle, in the San Francisco Mountains National Forest, in Coconino County, was commenced by Pearson Chapman, the area surveyed being 579 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. For the control of this area 155 miles of primary levels were run and 54 permanent bench marks were established by T. A. Green. The survey of the Troy quadrangle, in Pinal and Gila counties, was completed by Pearson Chapman and C. F. Eberly, the area surveyed being 250 square miles, for publication on the scale of 1:62,500, with a contour interval of 50 feet.

California.—The Department of Engineering of California allotted $12,000 for the continuation of cooperative topographic surveys in that State, and the United States Geological Survey allotted a like sum for the same purpose. In the Sacramento Valley the resurvey

of the areas covered by the Lodi and Sacramento reconnaissance maps was undertaken and resulted in the completion of the work in 14 quadrangles, the Carbondale, Goose Creek, Clements, Cosumnes, Clay, Lockeford, Waterloo, Castile, Headreach, Galt, Elkgrove, Franklin, Bruceville, and Linden, in Sacramento, San Joaquin, Solano, and Amador counties; and the partial completion of work in the New Hope, Woodbridge, Mills, Antelope, Arcade, Folsom, Pleasant Grove, and Roseville quadrangles. This work was done by W. R. McKean, B. A. Jenkins, E. R. Bartlett, R. M. LaFollette, Bayard Knock, and M. A. Knock, the total area resurveyed being 890 square miles, for publication on the scale of 1:31,680, with contour intervals of 5 and 10 feet. For the control of these quadrangles 373 miles of primary levels were run and 61 permanent bench marks were established by L. F. Biggs and B. A. Jenkins. In addition to the cooperative surveys a map was made of the Coalinga and the McKittrick-Sunset oil districts, which occupy an irregular strip in Fresno, Kings, San Luis Obispo, and Kern counties, consisting of 2,324 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. This work was done by E. P. Davis, G. R. Davis, J. W. Muller, J. E. Blackburn, and R. M. LaFollette. The survey of the Big Bar quadrangle, in the Trinity National Forest, in Trinity County, was commenced by J. P. Harrison; and that of the Mount Goddard and Bishop quadrangles, in the Sierra National Forest, in Fresno and Inyo counties, was commenced by G. R. Davis, the area surveyed by both being 674 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. For the control of the noncooperative work in California 602 miles of primary spirit levels were run and 155 permanent bench marks were established by L. F. Biggs. Triangulation control for the Weaverville, Big Bar, Sawyers Bar, and Seiad Valley quadrangles, in Trinity and Siskiyou counties, was completed by C. F. Urquhart, who occupied 21 triangulation stations, 7 of which are Coast and Geodetic Survey points. Control for ten 15-minute quadrangles in the Sacramento Valley, in Sacramento, San Joaquin, Amador, Eldorado, Placer, Sutter, Yuba, and Butte counties, was completed by Mr. Urquhart and C. L. Nelson, 76 new triangulation stations being established. For the control of the Woodbridge and Galt quadrangles, in Sacramento and San Joaquin counties, Mr. Urquhart ran 44 miles of primary traverse. For the additional control of the Davisville, Clarksburg, and Rio Vista quadrangles, in Sacramento and San Joaquin counties, 101 miles of precise levels were run and 17 permanent bench marks were established by L. F. Biggs.

Idaho.—The survey of the Meadows quadrangle, in the Weiser National Forest, in Washington and Boise counties, was commenced by C. F. Eberly and J. G. Hefty, the area surveyed being 162 square

miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. For the control of this and adjacent areas 287 miles of spirit levels were run and 62 permanent bench marks were established by Mr. Hefty and D. A. Maxwell.

Idaho-Oregon.—The Cambridge and Meadows 30-minute quadrangles, in Washington and Boise counties, Idaho, and Union County, Oreg., were controlled by G. T. Hawkins, who located 9 triangulation points.

Idaho-Wyoming-Utah.—The Montpelier, Cokeville, Evanston, and Kemmerer quadrangles, in Bear Lake County, Idaho, Uinta County, Wyo., and Rich County, Utah, were controlled by G. T. Hawkins, who located 13 triangulation points.

Nevada.—The survey of the Tonopah quadrangle, covering an area of 3,739 square miles in Esmeralda and Nye counties, was completed by J. E. Blackburn, for publication on the scale of 1:250,000, with a contour interval of 100 feet. For the control of this area 268 miles of primary levels were run and 51 permanent bench marks were established by T. A. Green.

Oregon-Washington.—For the continuation of cooperative topographic surveys in Oregon the state engineer allotted $2,500 and the United States Geological Survey allotted a like sum. The survey of the Umatilla quadrangle, in Morrow and Umatilla counties, Oreg., and Klickitat County, Wash., was completed by C. H. Birdseye, C. F. Eberly, C. E. Giffin, and Robert Muldrow, and that of the Eugene quadrangle, in Lane County, Oreg., was begun by J. P. Harrison and C. E. Giffin. The area surveyed was 837 square miles, 113 of which are in Washington, for publication on the scale of 1:125,000, with a contour interval of 50 feet. For the control of this area 135 miles of primary levels were run and 32 permanent bench marks were established, 30 miles of levels and 9 bench marks being in Washington. In addition to the cooperative mapping, the survey of the Mount Hood special area, in the Bull Run National Forest, in Clackamas and Multnomah counties, was continued by A. H. Sylvester and Ralph Cowgill, the area completely covered being 329 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. For the control of this and adjacent areas 92 miles of primary levels were run and 24 permanent bench marks were established by John R. Evans. A line of precise levels was begun by L. F. Biggs, 27 miles being completed, and 6 permanent bench marks were established.

The Umatilla quadrangle, in Morrow and Umatilla counties, Oreg., and Klickitat County, Wash., and the Pasco, Wallawalla, Wallula, and Dayton quadrangles, in Benton, Columbia, Garfield, and Wallawalla counties, Wash., were controlled by A. H. Sylvester and G. T. Hawkins, 19 triangulation points being located.

Utah.—The resurvey of a portion of the area covered by the Salt Lake reconnaissance map, in the Uinta National Forest, in Wasatch, Summit, and Utah counties, was begun by A. E. Murlin, who completed the work on the Strawberry Valley quadrangle and commenced that on the Soldier Summit quadrangle, the total area resurveyed being 862 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. For the control of the Calleo quadrangle, in Millard County, T. A. Green ran 40 miles of primary levels and established 8 permanent bench marks.

Washington.—The survey of the Mount Baker quadrangle, in the Washington National Forest, in Whatcom and Skagit counties, was commenced by Robert Muldrow, the area surveyed being 57 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. For the control of this quadrangle 39 miles of primary levels were run and 7 permanent bench marks were established by Homer M. Hadley.

OFFICE WORK.

The drafting of the following sheets was completed: Carbondale, Goose Creek, Clements, Cosumnes, Clay, Lockeford, Waterloo, Castile, Woodbridge, Galt, Elkgrove, Franklin, Bruceville, Linden, Antioch (first named Montezuma), and Coalinga and McKittrick-Sunset oil districts, California; Tonopah, Nev.; Umatilla, Oreg.; and Strawberry Valley, Utah. Progress was made in the drafting of sheets as follows: Flagstaff, Ariz., 43 per cent; New Hope, Cal., and Mount Hood special, Oregon, each 50 per cent.

In the triangulation and computing section the following computations were made:

Level circuits in the Bowie, Chiricahua, Pearce, Wilcox, Flagstaff, Grandview, and Williams quadrangles, in Cochise and Coconino counties, Ariz., were adjusted.

Office computation was made of the precise line of levels from Sacramento, Cal., down the river. Primary-level circuits in the Folsom, Galt, Hatchville, Ione, Lockeford, Stockton, and Woodbridge (Cal.) quadrangles were adjusted. The least-square adjustment of the triangulation done in California in 1907 was made in the Sacramento office.

For the control of the Cambridge and Meadows 30-minute quadrangles (Idaho-Oregon) the least-square figure adjustment and final computation of geodetic distances and positions were made. Level circuits in the same area were adjusted. For the control of the Montpelier, Cokeville, Evanston, and Kemmerer quadrangles, in Bear Lake County, Idaho, Uinta County, Wyo., and Rich County, Utah, the least-square figure adjustment of the triangulation was made and the geodetic positions of 13 triangulation stations were computed.

For the completion of the control of the Furnace Creek and Las Vegas (Nev.) quadrangles computation was made of the approximate positions of certain points located during the preceding season. Level circuits in the Tonopah (Nev.) quadrangle were adjusted.

The least-square figure adjustment and final computations of geodetic distances and positions of triangulation stations for the control of the Umatilla, Benton, Pasco, Wallawalla, Wallula, and Dayton quadrangles (Wash.-Oreg.) were made. Level circuits in the Blalock Island and Umatilla quadrangles, in the same States, were adjusted.

COMPILATION OF SPECIAL NATIONAL-FOREST MAPS.

The work of preparing the folios of the atlas of the national forests was continued under the direction of A. C. Roberts.

The maps were made on the scale of 1 mile to the inch and published with 6 townships to the page. All the work of the United States Geological Survey, the General Land Office, and the Hayden, Transcontinental, and Wheeler surveys, as well as that of private surveys, was incorporated in the maps. The status of all lands inside of the forests was obtained in greatest detail from the records of the General Land Office by expert status clerks, and the land classification and the improvements in the forests from the maps of the Forest Service, all these data being shown in colors and symbols on the compiled maps.

Folios were finished during the fiscal year 1907–8 for the following forests: Gallatin, Chiricahua, Lewis and Clark, Manti, Payson, Beaver, Wichita, Trinity, Olympic, Sawtooth, Klamath, Madison, Blue Mountain, Mount Graham, Big Belt, Wasatch, Bitterroot, Priest River, Sierra Madre, Bear River, Siskiyou, Prescott, San Gabriel, and Holy Cross.

The maps were nearly completed for the Hell Gate, Stanislaus, Battlement Mesa, and San Bernardino forests. The Gunnison, Cochetopa, and Tahoe forest maps were about one-half completed, and work was started on the maps of the Lolo, Arkansas, Grand Canyon, Huachuca, La Sal, Santa Catalina, Santa Rita, and Monticello forests.

The work was greatly retarded during the latter part of the year owing to changes in boundaries and redistricting of national forests.

INSTRUMENTS AND TOPOGRAPHIC RECORDS.

During the year all the topographic instruments in the office were examined, and all those found to be worn out, useless, or of obsolete types were condemned by a committee appointed by the Director. Some of these were deposited in the National Museum and the remainder were sold at auction. There were purchased ten 15-inch Y levels, nine telescopic alidades, twenty 20-foot leveling rods, two

6-inch transits, three aneroid barometers, and sixteen steel tapes; also an air pump connected with a mercurial barometer for testing aneroids and an apparatus for engraving numbers on instruments, both of which have already proved their usefulness. All minor repairs to instruments were made in the Survey shop, the extensive repairs or remodeling being done by outside contractors as heretofore.

A change in the system of filing topographic records was adopted whereby the work of cataloguing is materially reduced. There were 2,225 new records catalogued and filed. The triangulation and leveling plats of all States, the card catalogue of triangulation and primary-traverse stations, and the card catalogue of bench-mark descriptions and elevations were brought up to date.

INSPECTION OF TOPOGRAPHIC SURVEYING AND MAPPING.

During the field season inspection of topographic mapping, completed or in progress, was carried on by J. H. Renshawe in the northeastern and central portions of the United States, by W. M. Beaman in the southeastern and central parts, and by François E. Matthes in the western part. All States in which work was in progress were visited during the season, and the parties were instructed for the purpose of maintaining uniformity of style and system in the expression of topographic features.

During the office season careful attention was given by the inspectors to the final drawing of topographic sheets, for the purpose of eliminating personal characteristics and errors of expression.

WATER-RESOURCES BRANCH.

ORGANIZATION.

During the last year an effort has been made to maintain as much as possible of the investigations of the water resources of the country—work formerly carried on under larger but still insufficient appropriations. The work performed may be divided, as formerly, into three parts: First, the investigation of stream flow and allied problems; second, the investigation of the occurrence, sources, and amounts of underground waters in various portions of the country; and third, the investigation of the quality of water, both surface and underground. A combination of these three investigations is necessary to afford the data for the determination of water resources required in the appropriation act.

The work was carried on under the direction of M. O. Leighton, chief hydrographer, assisted by John C. Hoyt, assistant chief hydrographer. The chief hydrographer was designated as advisory hydrographer to the Inland Waterways Commission, and in that capacity

presented a report on the possibility of preventing floods and assisting navigation in the Ohio Valley by the construction of upland reservoirs, which has been widely discussed in engineering and popular journals.

STREAM-FLOW INVESTIGATIONS.

The total number of river-measurement stations maintained by the water-resources branch during the fiscal year 1907–8 was 630, of which 367 stations were carried on independently by the Geological Survey and 263 stations were maintained in cooperation with other organizations.

New York and New England district.—The great reduction in the appropriation for the past fiscal year rendered it necessary to discontinue a large amount of work in this as in other districts.

Stream measurements were made in this district at 53 stations, and, in addition, river profiles and lake surveys were made in cooperation with the Survey Commission of the State of Maine. These surveys covered Chamberlain, Allegash, and Telos lakes, in the Allegash River drainage; Webster, Second, and Grand lakes, in the East Branch of Penobscot River drainage; Baskahegan and Mattawamkeag lakes, in the Mattawamkeag River drainage; Mattawamkeag River from mouth to mouth of Baskahegan Stream; Schoodie, Seboois, and Endless lakes, and Pleasant Pond, in the Piscataquis River drainage. The amount appropriated by the State of Maine was $3,200.

The State of New York also cooperated in stream-measurement work, the state legislature having granted authority to the state engineer to expend $1,500 for this purpose. This sum was applied to the maintenance of 13 stations. The New York state water supply commission, charged with the duty of making a report on water powers within the State, availed itself of the organization of the Geological Survey for the maintenance of 6 stations in connection with its work. The total amount appropriated by the state water supply commission for this purpose was $1,950.

A report on the hydrography of the Penobscot River basin, dealing with stream flow, quality of water, floods, navigation, water power, and water storage, was in preparation during the year and is nearly completed.

Work in this district was under the charge of H. K. Barrows, district engineer.

Middle Atlantic States district.—In this district, which covers the States of Pennsylvania, New Jersey, Maryland, Virginia, and West Virginia, a large part of the work was discontinued for lack of funds. Thirteen stations were, however, maintained by the Geological Survey, in addition to the Pennsylvania stations, the expenses

of which were borne by the state water supply commission of Pennsylvania. The stations maintained in the State of Maryland were supported through the cooperation of W. B. Clark, state geologist.

Work in this district was under the charge of J. C. Hoyt, assistant chief hydrographer.

Southern Atlantic States district.—The act of Congress authorizing the Secretary of Agriculture to investigate and report on the watersheds of the southern Appalachian and White Mountain regions, with reference to the advisability of the Government purchasing and setting apart these regions as national forest reserves, made it possible to increase the work in this district. The Secretary of Agriculture requested the Director of the Geological Survey to take up the stream investigations involved in this work and made an allotment therefor of $6,000. Reports on the relation of the southern Appalachian Mountains to water power and to inland navigation were presented to the Department of Agriculture and printed as two circulars of the United States Forest Service, and a third report, on floods, is now being prepared.

Stream measurements were made in this district during the year at 106 stations, 43 of which were maintained from the appropriation above referred to. The work in the district was under the charge of M. R. Hall, district engineer.

Central States district.—The important investigations in this district that were temporarily discontinued during the fiscal year 1907 on account of the great reduction in appropriation were resumed during the latter part of the fiscal year 1908. These investigations, relating to the seasonal distribution of stream flow and its relation to floods, to navigation, and to water power, are being vigorously pushed.

There were 39 stations maintained in this district, and the work was under the charge of A. H. Horton, district engineer.

Missouri River district.—In this district, which includes the States of North Dakota, South Dakota, Montana, and northern Wyoming, 82 stream-measurement stations were maintained, and the work was confined chiefly to those streams available for irrigation. In the maintenance of stations connected with irrigation projects under construction the United States Reclamation Service cooperated.

Work in this district was directed by Robert Follansbee and, later, by J. E. Stewart, district engineer.

Denver district.—This district includes the States of Colorado, southern Wyoming, Nebraska, Kansas, Oklahoma, and Texas and the Territory of New Mexico. Of the 72 river-measurement stations maintained in the district during the year, 13 were located on irrigation projects, and the expenses of these were paid by the United States Reclamation Service.

As this district holds the sources of some of the most important streams of the country, the work here is of especial importance. The memorable suit between the State of Kansas and the State of Colorado concerning the diversion of the waters of Arkansas River has emphasized the necessity of procuring more accurate data concerning all matters relating to the utilization of water. The results of suits of this kind not only have local interest but are highly important from a national standpoint, as, with the growth of the country, interstate suits growing out of stream diversion will doubtless become more frequent.

The work in this district was under the charge of W. B. Freeman, district engineer.

Great Basin district.—In this district, which comprises the States of Idaho, Utah, and Nevada, stream measurements were made at 50 stations. The United States Reclamation Service cooperated in the maintenance of project stations in all three of these States, while additional cooperation was rendered by the state engineer of Nevada.

Work in this district was under the direction of E. C. LaRue, district engineer.

Columbia River district.—The district including the States of Washington and Oregon contains water resources of notable interest and value. The region is drained by the Columbia, one of the largest rivers on the continent, a stream of interstate and national importance. Although enormous developments have taken place in this district, it can hardly be said that more than a beginning has been made, and the necessity for thorough knowledge of the water resources in advance of settlement is fully realized. The United States Government owns vast areas in this region, and a further postponement of extensive investigations can not be justified under any proper standard of governmental administration.

Forty-five stations were maintained in Washington and 67 stations in Oregon. The work in Oregon was conducted in cooperation with the state engineer.

The work in this district was directed by J. C. Stevens, district engineer.

California district.—The work in California was carried on in cooperation with the State, a liberal appropriation having been made by the state legislature in response to the demand of citizens who realize that industrial development is almost absolutely dependent on a systematic investigation of water resources.

River measurements were made at 73 stations, and observations and surveys looking to the diffusion of information concerning the conservation of water supplies were also made.

The stream-measurement work in this district was under the direction of W. B. Clapp, district engineer.

In addition to the direct investigation of stream flow throughout the State, an investigation of the laws of transportation of suspended material in rivers was carried on in the hydraulic laboratory maintained at Berkeley. This investigation is one of the most important ever undertaken by the United States Government, for it affects questions of navigation and irrigation throughout the country. The Government has expended many millions of dollars in removing from river channels the débris brought down by floods, and this annual expenditure for dredging may be expected to continue until a scientific study of the whole question of débris transportation shall have found a solution to the problem. This investigation is an integral part of the whole purpose of the Survey's water investigations, namely, the ascertainment of the basic facts upon which future corrective development of river channels must depend.

The débris investigation was under the charge of G. K. Gilbert, geologist, the work being conducted in cooperation with the geologic branch.

GROUND-WATER INVESTIGATIONS.

Investigations of the underground waters of the United States were continued during the fiscal year 1907–8 as during previous years, except that as the appropriations were less the work was necessarily continued on a reduced scale.

The most comprehensive general investigation under way during the year in this division was that of the ground waters of the Atlantic Coastal Plain. This work was undertaken as a result of a cooperative agreement entered into between the United States Geological Survey and the state geologists of the Coastal Plain States. The geologic and water-resources branches of the Survey shared the federal portion of the expense, and the work was placed under the general direction of M. L. Fuller, continuing under his charge until his resignation from the Survey in the autumn of 1907. T. Wayland Vaughan was then named as federal representative, and the work was continued under his supervision.

Toward the close of the year work in the Coastal Plain of Texas, which had been pursued as an independent investigation, was placed under Mr. Vaughan's charge, for the reason that the Texas Coastal Plain is, in all essential particulars, a part of the general Coastal Plain province.

Prof. C. H. Gordon completed during the summer of 1907 the field work involved in two investigations in northern Texas, one covering the north-central portion of the State and the other the northeastern portion. Professor Gordon resigned from the Survey to accept a position as professor of geology in the University of Tennessee, entering upon his duties with the beginning of the school year. His

university duties interfered with the preparation of his federal reports, but these were taken up at the end of May, and by July 1 substantial progress had been made on the report on north-central Texas. That on northeastern Texas will be delayed.

A report in preparation by Prof. H. E. Gregory, of Yale University, on the ground waters of Connecticut was submitted during the year and at its close was undergoing revision.

A report by Prof. A. F. Crider on the ground waters of eastern Arkansas was likewise submitted toward the close of the year and is undergoing revision.

A report by George C. Matson on the ground waters of the bluegrass region of Kentucky, prepared as a result of field work carried out during the previous fiscal year, was submitted for publication toward the close of the year.

A report by F. G. Clapp on the ground waters of southern Maine, prepared as a result of field work carried out during previous years, was forwarded for publication toward the close of the fiscal year.

Substantial progress has been made in the preparation of a report on the ground waters of the State of Iowa, in which Prof. W. H. Norton, of Cornell College, Mount Vernon, Iowa; Prof. W. S. Hendrixson, of Iowa College, Grinnell, Iowa; and H. E. Simpson, of the United States Geological Survey, cooperated.

The preparation of a report on the ground waters of southern Minnesota has been continued during the year by O. E. Meinzer, acting in cooperation with Prof. C. W. Hall, of Minneapolis. Mr. Meinzer's share of the work was completed at the end of the year, and it is expected that Professor Hall's portion will soon be finished.

Work in the three Pacific Coast States has been continued under the general direction of W. C. Mendenhall. As a result of this work a report on the ground waters of south-central Oregon, by G. A. Waring, was submitted and sent to the Public Printer toward the close of the year. Field work was completed by Mr. Waring as a basis for reports on the ground waters of the Harney basin, in southern Oregon, and on the ground waters of the lower Yakima Valley, in Washington. The Harney basin report was submitted for publication, and that on the Yakima Valley is well advanced toward completion. Reports were submitted during the year and have been sent forward for publication on the ground waters of the Indio region, California, by W. C. Mendenhall, and on the foothill belt of southern California by the same author.

At the close of the year Mr. Mendenhall had under way a preliminary report on the ground waters of the San Joaquin Valley, and a bulletin which will embody the geologic results attained as an incident to the ground-water investigations in this field.

In January Mr. Mendenhall, whose headquarters had theretofore been in Los Angeles, Cal., was recalled to the Washington office, and at the close of the year he was given general charge of the underground-water work in the United States.

INVESTIGATIONS OF QUALITY OF WATER.

Investigations of quality of water have been made under the general supervision of R. B. Dole, assisted by Herman Stabler, H. N. Parker, W. D. Collins, E. B. Phelps, Chase Palmer, and others.

Surface waters of the United States.—The most important investigation of quality of water conducted during the year has been the continuation of a study of surface waters commenced in 1906, as detailed in the report of last year. In connection with this work more than 50,000 samples of water have been collected from the principal lakes and streams of the United States, and about 4,800 analyses have been made. The analytical work of this study has been completed and the water-testing laboratories that were established for its performance have been discontinued. Reports are now being prepared discussing the analytical results in relation to industrial and municipal uses of water, chemical denudation, and other features.

Analyses of underground waters.—Besides the tests of surface waters, about 300 mineral analyses of well and spring waters have been made in connection with underground-water investigations in Florida, Indiana, Kentucky, Virginia, and Texas. It has been demonstrated that much more economical and satisfactory results are obtained by making water analyses in laboratories established and maintained by the Survey than by paying private laboratories for such work or depending on miscellaneous analyses that may have been made on waters from the regions under study. Several reports involving results of work of the water-testing laboratories on underground waters have been prepared for publication.

California.—In cooperation with the state board of examiners of California, the investigation of the quality of surface waters in that State has been continued. A chemical laboratory under the direction of Walton Van Winkle, assistant chemist, has been established at Berkeley, where samples of water from stations on the principal California streams are analyzed. Considerable information in regard to the quality of underground waters has also been obtained.

Kansas.—In cooperation with the state board of health of Kansas, H. N. Parker, assistant hydrographer, has continued the investigation of the quality of waters of the State. The field work, which involved the complete analysis of about 800 samples of water, 300 field assays of water, and the collection of detailed information regarding the waterworks and sewerage systems of practically every municipality

in the State, was completed, and the last half of the year was spent in preparation of a report for publication.

Pollution investigations.—A study of the pollution of streams by certain industrial wastes and of methods of preventing the same has been conducted in cooperation with the sanitary research laboratory of the Massachusetts Institute of Technology. E. B. Phelps, assistant hydrographer, has made extensive original research into the character of sulphite-pulp waste liquor and methods of utilizing it, and has submitted his report on that subject.

Industrial uses of water.—A manuscript on the industrial uses of water has been partly prepared by Herman Stabler, assistant engineer. The report considers in detail the different industrial processes in which water is used, the effect of impurities, and various methods of preparing water for industrial consumption.

TECHNOLOGIC BRANCH.

ORGANIZATION.

The organization of this branch in Washington remained the same as at the close of the preceding year, embracing the expert in charge, Joseph A. Holmes; the chief engineer, Herbert M. Wilson, who in the absence of the expert in charge assumes his duties; the editorial assistants; and the general clerical force engaged on the correspondence, records, supplies, shipments, accounts, and bibliography. From the Washington office directions are issued to officers and employees in different parts of the country.

FUELS DIVISION.

The analyzing and testing of the coals, lignites, and other mineral fuels belonging to and required for the use of the United States, in order to determine their fuel value, were continued during the year. The work of the fuels division by sections is summarized as follows:

CHEMICAL SECTION.

The work of the chemical section covered in general all analyses and calorimeter determinations of fuels, including coals used by the Government; the chemistry and physics of the combustion of fuels; the heating value of the various fuels and methods of determining it; and the by-products obtainable in the coking of coals, mainly from public lands. Physical and chemical investigations of the composition of fuels and of the gases evolved at different temperatures and high-temperature measurements of the products of combustion were made by J. K. Clement. A small laboratory was maintained at Washington under the direction of G. O. Spitler for sampling the coals purchased by the government departments in that city.

During the year 1,624 samples of coal were analyzed under the direction of F. M. Stanton, the work involving 24,360 determinations. Calorimeter tests were made on Illinois and Pennsylvania coals to determine their yields in by-products. A laboratory investigation of the losses of moisture and gases by lignites and subbituminous coals in drying was completed. Tests were made by H. C. Porter on the " volatility " or ease of volatilization of different coals, to determine the smoke-producing constituents given off at various temperatures. An investigation of California petroleum was started by Irving C. Allen, 480 samples, covering all the oil fields in the State, being collected. Research work was conducted by J. C. W. Frazer on the composition of coal, involving the use of various solvents for the hydrocarbons, with the object of isolating definite compounds.

A laboratory study of the deterioration of coal in storage was begun, samples of seven representative coals being stored under different conditions. From time to time the amount and composition of gases given off by coal in closed vessels were determined and changes in the character of the coal noted.

The experimental work done at the former chemical laboratories in St. Louis was described in a bulletin (No. 323) that appeared during the year.

STEAM-ENGINEERING SECTION.

Tests were made at Norfolk, on behalf of the Government, to determine the most efficient method of burning certain Virginia and West Virginia coals under boilers. In addition 28 steaming tests with briquets were made on a locomotive and 20 on the U. S. torpedo boat *Biddle*. In cooperation with the Navy Department a test of briquets under service conditions was made on the battle ship *Connecticut*.

During the year the results of a study of 400 steaming tests made at St. Louis were published in a bulletin (No. 325) and the results of a special investigation of drafts were prepared for publication. A report dealing with experiments in heat transmission is in preparation.

The work of the steam-engineering section was under the general direction of D. T. Randall. W. T. Ray conducted investigations on the combustion of fuels in different types of furnaces.

PRODUCER-GAS SECTION.

About 1,251 tests were made in the liquid-fuel investigations, including the effect of various adjustments of the engines on their efficiency, the comparison of gasoline as a power producer with denatured alcohol, and the results of diluting the fuels.

Producer-gas tests, numbering 7, involving 55,965 observations, were made by the close of November, when the gas producer and engines were dismantled and work was concentrated at Washington on computing and tabulating the results.

The results of the gasoline-engine tests at Norfolk have been compiled for publication as a bulletin, and a report dealing with producer-gas tests is in preparation.

Under D. T. Randall, in charge of fuel efficiency tests, C. D. Smith continued in charge of the producer-gas section, and R. M. Strong was engaged on investigations of liquid fuels.

INSPECTION AND SAMPLING SECTION.

The inspection and sampling section has been under the supervision of J. S. Burrows. Its work comprised the collection of mine and car samples of fuels shipped to the testing plants, and also the sampling of coals purchased by various departments of the Government, 966 samples being collected from deliveries to different government buildings in Washington, D. C., and 553 samples being received from various branches of the government service in different parts of the country.

A report on the mine sampling and analysis of the coals tested at Norfolk has been submitted for publication. A bulletin (No. 339) on the purchase of coal under government and commercial specifications on the basis of its heating value was published during the year.

SMOKE-ABATEMENT SECTION.

Supplementing the work of the steam-engineering section, H. W. Weeks, of the smoke-abatement section, under the direction of D. T. Randall, compiled data on the methods and appliances used at more than 500 power plants, in nine States, where bituminous coals were burned under boilers without smoke, the main purpose of the inquiry being to procure a basis for better practice at government plants. The information gathered has been tabulated for publication. A preliminary statement (Bulletin 334) dealing with the smoke problem and the essentials of smokeless combustion was published during the year.

COKING AND WASHERY SECTIONS.

The coking section at Denver continued under the direction of A. W. Belden, and the washery section, also at Denver, under that of G. R. Delamater. During the fiscal year 57 coking tests and 67 washery tests were completed, the samples being taken from coal seams on or adjacent to public lands of the United States. The tests were made with a view to determining the improvement in quality

to be obtained by washing and the possibility of making satisfactory coke from particular coals, or from mixtures of different coals.

During the year the results of washing and coking tests of coal and cupola tests of coke made by the fuel-testing plant at St. Louis were published in a bulletin (No. 336).

BRIQUET SECTION.

The work of the briquet section, under the charge of C. T. Malcolmson, was conducted at the Norfolk fuel-testing plant. About 850 tons of briquets were made, of which 460 tons were for tests on naval vessels, 320 tons for tests on locomotives, and 70 tons for the steam-engineering section. Absorption, specific gravity, tumbler, and weathering tests of the briquets have been made; also flowing tests on binders and tests of oils by distillation.

A discussion of the comparative merits of various substances used as binders was published in Bulletin 343. Another bulletin giving details of manufacture and the results of chemical and physical tests of the briquets made at Norfolk is in preparation. The results of steaming tests with briquets will be published separately.

COAL WASTE AND MINE EXPLOSIVES SECTION.

Investigations designed to prevent waste in the development of the nation's fuel supplies and to lessen danger to the miner from explosions of gas or dust were made under the direction of Clarence Hall. During the year Mr. Hall visited the Darr and Naomi mines in Pennsylvania, the Monongah mine in West Virginia, and the Yolande mine in Alabama, where there had been serious explosions, to get at first hand all available data on the conditions existing before the disasters, the exact manner in which the explosions were propagated, and the results of the explosions. He also visited the Shoneberger mine near Pittsburg while it was on fire.

As part of its work this section analyzed samples of black powder and dynamite for the United States Reclamation Service; it also analyzed dynamite and exploders and tested blasting machines and electric fuse wires for the Isthmian Canal Commission, besides inspecting at frequent intervals the plants at which the explosives used by the commission are manufactured. Various other analyses of explosives were made.

A preliminary statistical report on coal-mine accidents was issued as a bulletin (No. 333).

STRUCTURAL-MATERIALS DIVISION.

Investigations of structural materials belonging to and used by the United States, such as stones, clays, cements, etc., were continued dur-

ing the year at the structural-materials testing laboratories in Forest Park, St. Louis, Mo. The work was directly under the care of Richard L. Humphrey, engineer in charge of the division, who had the assistance of a corps of engineers, chemists, geologists, and others.

LABORATORY WORK.

The following is a résumé of the operations of the division:

Summary of operations of the structural-materials division.

Section.	Test pieces.	
	Made.	Tested.
Constituent materials	3,915	8,031
Beam	1,104	2,764
Block	419	716
Permeability	1,964	1,866
Shear	97	32

In addition to the above-enumerated tests the following analyses were made in the chemical section:

Steel	2,011
Cement	1,113
Rock	38
Wire screen	31
Miscellaneous	355

Also analyses of water, cement, sand, etc., and 631 determinations of mortars, cinders, steel, cements, lime, and rocks were made for the United States Reclamation Service.

In all 3,548 analyses and about 25,000 determinations were made.

All the laboratory work undertaken was done on a basis of cooperation with the ordnance-testing laboratory at Watertown, Mass., so that duplication might be avoided. No important changes in the equipment of the laboratories were made during the year.

FIELD WORK.

A preliminary examination of materials about Denver, St. Louis, and San Francisco, as well as a detailed study of the structural materials about Portland, Oreg., and Tacoma and Seattle, Wash., was made by N. H. Darton, geologist, who was assigned to the technologic branch. Several tons of sand, gravel, and broken rock were obtained at Portland and Seattle and shipped to St. Louis to be tested for their value in concrete.

Other field work was done in Illinois, Iowa, and Missouri, and samples of stone and sand were shipped to St. Louis from several localities.

PUBLICATIONS.

A bulletin (No. 324) on the San Francisco earthquake and fire; another (No. 329) describing the organization, equipment, and operation of the structural-materials laboratories; a third (No. 331) on Portland cement mortars and their constituent materials; and a fourth (No. 344) treating of the strength of concrete beams have been published during the year. A report describing fire-resisting tests of various building materials has been submitted for publication.

SPECIAL INVESTIGATIONS.

The following special problems were studied: The occurrence and distribution of workable peat deposits, by C. A. Davis, peat expert; the origin of coal, by C. D. White, geologist; microscopic investigations of coal, by R. Thiessen, assistant chemist; and the occurrence of gases in coal, by R. T. Chamberlin, assistant geologist.

Mr. Davis visited a number of peat bogs in the Atlantic States.

Mr. White completed a study of the relative importance of oxygen and ash in coal as affecting its heating value, based on the large number of ultimate analyses of coal and lignite made by the fuels division, and prepared a report on his findings. Mr. White also took up the experimental treatment of the lignites of North Dakota and eastern Montana, in order to develop methods of handling that will give quantitative as well as microstructural data. Several related coals and some living woods were included in these studies for the sake of comparison.

Mr. Chamberlin, in connection with his work, visited the Monongah mine, in West Virginia, and the Naomi and Darr mines, in Pennsylvania, after disastrous explosions, and collected samples of mine air, after damp, gas, dust, and coal, which he analyzed. Comparative studies on the mine-dust samples, charred and uncharred, old dust from the main entries, and fresh dust obtained near the coal face have been in progress.

PUBLICATION BRANCH.

BOOK-PUBLICATION DIVISION.

SECTION OF TEXTS.

The publications of the year consisted of 1 annual report, 1 monograph, 2 professional papers, 30 bulletins (1 of which was also published in 7 separate chapters) and 13 advance chapters from one other bulletin, 22 water-supply papers, 1 annual report on mineral resources for 1906 (also published in 45 separate chapters), 5 advance chapters from the annual report on mineral resources for 1907, and 9 geologic folios. These publications were the Twenty-eighth Annual

Report; Monograph XLIX; Professional Papers 53 and 56; Bulletins 304, 309, 311, 313, 316 (volume and 7 separates), 317 to 337, 339, 13 separates from 340, and 342 to 344; Water-Supply Papers 195, 197, 198, 199, and 201 to 218; Mineral Resources for 1906 (volume and 45 separate pamphlets) and 5 separate chapters from Mineral Resources for 1907; geologic folios 151 to 159, inclusive. Summaries of these publications are given on pages 11–20 of this report. They comprise 10,149 pages, those of the last fiscal year covering 14,875 pages. In addition to the publications of the regular classes many circulars and pamphlets, most of them relating to administration, were published.

During the year 20,691 pages of manuscript were prepared for printing, and proof sheets for 10,827 final printed pages were read and corrected, this work involving the handling of 4,479 galley and 16,140 page proofs. The corresponding figures for last year were 26,912 manuscript pages, 16,833 final printed pages, 7,112 galley proofs, and 28,018 page proofs.

The make-up was prepared for 369 plates, the proofs of which were also read, as against 661 plates so prepared last year.

Indexes were prepared for 39 publications, covering 7,538 pages, the corresponding figures for last year being 67 publications and 12,167 pages.

Six persons have been employed in this section for most of the year. The amount of work recorded is considerably less than that reported last year, but material assistance was rendered at different times in reorganizing the work of the section of distribution.

SECTION OF ILLUSTRATIONS.

Illustrations were prepared for 1 annual report, 3 professional papers, 25 bulletins, 7 water-supply papers, 2 volumes of mineral resources, and 1 handbook for geologists. These illustrations consisted of 175 maps, 713 sections and drawings, 3,325 paleontologic drawings, 586 photographs (retouched), and 144 miscellaneous illustrations.

At the close of the year material for the illustration of 28 reports was in hand, part of which has already been prepared. The committee on illustrations has rejected during the year 433 illustrations, or 8 per cent of the number submitted to the publication division.

Proofs to the number of 1,858 were received and compared critically. Not only have many proofs been carried up to the fourth revise, but considerable preliminary proof reading of lithographic map work has been done to expedite the completion of the lithographs by the contractors. The examination of the printed editions of 403 plate inserts delivered by the various contractors at the Government

Printing Office resulted in the rejection of 2,007 copies, and their reprinting was ordered by the Public Printer.

During the year 182 electrotypes were furnished to outside applicants not connected with this Survey, and 45 cuts were reused in various reports.

SECTION OF GEOLOGIC MAPS.

The number of folios published and prepared for publication by this section was less than usual this year, and the drafting force was employed part of the time in compiling data for the geologic map of North America and preparing maps for other geologic reports. At the beginning of the year 15 folios were on file or in course of publication, and 4 were transmitted to the section for publication during the year. Of these 9 have been issued. (See pp. 19–20.)

On June 30, 1908, but one folio, Mercersburg-Chambersburg, Pa., was on file and 9 were in course of engraving and publication: Aberdeen-Redfield, S. Dak.; Accident-Grantsville, Md.-Pa.; Bellefourche, S. Dak.; El Paso, Tex.; Franklin Furnace, N. J.; Philadelphia, Pa.-N. J.; Santa Cruz, Cal.; Trenton, N. J.-Pa.; Watkins Glen-Catatonk, N. Y.

SECTION OF TOPOGRAPHIC MAPS.

A year ago the editor of topographic maps reported 69 new topographic atlas sheets and special maps which had not yet been put into the hands of the engravers and 34 in process of engraving. The corresponding figures on June 30, 1908, were 54 and 37. The accessions during the year numbered 81 maps, and the withdrawals 3 maps; 90 maps were published.

Manuscripts edited, including verification or correction of all geographic names: Atlas sheets and special maps, 77; corrections, 158 maps. Proof read: New topographic atlas sheets and special maps, 90; corrections, 158. During the year the manuscripts of 179 map illustrations to be included in 33 volumes, including 2 Senate documents, were examined and edited. Five persons were engaged in the work of this section during the entire year.

SECTION OF DISTRIBUTION.

There were delivered to the section of distribution during the year 127 new books, 9 folios, 87 new maps, 127 reprints of maps, and 15 special maps, a total of 365; the totals of all editions being 332,523 books, 42,231 folios, and 534,477 maps; grand total, 909,231.

During the year 333,705 volumes, 39,389 folios, and 474,868 maps (including 369,521 sold), a total of 847,962, were distributed.

The total amount received and turned into the Treasury as a result of sales of publications was $17,013.56, a decrease of $1,619.75 from the amount received during the year 1906–7.

During the year 76,670 letters were received, answered, and filed, being 7,210 fewer than for the preceding year.

DIVISION OF ENGRAVING AND PRINTING.

MAPS, FOLIOS, AND ILLUSTRATIONS.

At the beginning of the year 103 atlas sheets and special maps were on hand for publication, 34 of which were partly engraved. Of these, 3 were afterward withdrawn, leaving 100. The accessions during the year (comprising new maps, reductions, and combinations) numbered 81 maps. The status of these 181 maps on June 30, 1908, was as follows:

Published during the year or in press at its close (double sheets counted one)	90
In process of engraving	37
Not taken up	54

Besides the engraving of new maps, corrections were made on the copperplates of 158 maps hitherto published. Editions of 214 maps were printed and delivered to the map room. Of these, 87 were new and 127 were reprints or new editions.

Nine geologic folios were published and 42,231 copies printed and delivered. Nine other geologic folios were partly completed at the close of the year.

Under contracts with the Government Printing Office, illustrations were printed for the following publications: Professional Papers United States Geological Survey, Nos. 55, 60, 62, 63; Bulletins United States Geological Survey, Nos. 318, 320, 321, 324, 335, 338; congressional documents, Sixtieth Congress, first session—Senate Documents Nos. 151 and 325, Senate Report No. 580, and House Document No. 719. For the Government Printing Office, also, maps of 9 bird reservations, 2 national monuments, and 1 national park were reproduced and printed. For the Forest Service maps of 27 national forests were reproduced, printed, and delivered. This work for other branches of the Government amounted to $46,800.90, and the division was reimbursed by transfer of credit on the books of the United States Treasury.

Of miscellaneous matter of all kinds the total number of copies printed was over two million and required over seven million printings. The total number of copies printed of maps, folios, and miscellaneous matter was 2,824,796, requiring over eleven million impressions. There were also 299 transfer impressions made and sent to contracting printers.

INSTRUMENT SHOP.

The work of the instrument shop consisted in overhauling and repairing surveying, drafting, and engraving instruments, and in

making copperplates and electrotypes. More than 1,700 repairs were made to instruments, and 273 new copperplates and 35 electrotypes were finished.

PHOTOGRAPHIC LABORATORY.

The output of the laboratory included 14,194 negatives, of which 13,087 were glass and 1,107 were paper; 42,763 prints, of which 11,650 were map prints and 31,113 were mat prints; and 1,411 lantern slides.

ADMINISTRATIVE BRANCH.

EXECUTIVE DIVISION.

Correspondence, records, appointments, supplies, and shipments.—The total amount of work performed in this section was considerably greater than that for the fiscal year ending June 30, 1907. The scope of the work of the section has been enlarged (1) by the appointment of a purchasing clerk, whose duty it is to make arrangements for purchases of all material procured at Washington in the open market, and to issue the orders therefor; (2) by the establishment of a "follow-up" system on all correspondence recorded in the section; (3) by the recording of a greater proportion of the letters received; (4) by the establishment in the section of the sales offices for local cash sales of Survey publications; (5) by the establishment of a system of cost keeping; and (6) by the increased number of letters filed. Moreover, the general growth of the Survey manifests itself at every desk in this section.

Mails, files, and records.—During the year 107,283 pieces of mail were received, an increase of 2 per cent over the number for the previous fiscal year. Of this mail, 20,218 pieces, an increase of more than 10 per cent over the number for 1907, contained remittances for sale publications of the Survey.

The recording and filing of correspondence required the services of three clerks throughout the greater part of the year. The number of letters mailed through the section was 66,860, of which 17,509 were registered.

Personnel.—In the roster of secretarial appointments 916 changes were made and recorded during the year, as compared with 1,002 in the previous year. Of these changes 335 were new appointments, 147 separations (4 by death), 247 promotions, and 9 reductions. The remaining 178 changes were such as not to affect the total number of employees or the pay rolls, and included extensions of limited appointments, changes of title, changes from annual to per diem rating or the reverse, the designation of disbursing agents, etc. The decrease in the number of changes recorded is accounted for by the change in the department method of making probationary appointments absolute. There are now on the rolls of the Survey 840 names, an increase of 188, or 28.8 per cent.

An average of 1,250 applications for leave were handled per month, or 15,000 for the year. These covered 11,331 days of annual leave and 2,428½ days of sick leave, being 55 per cent of the amount of annual leave and 12 per cent of the amount of sick leave which it is permissible to grant under the law; also 8,508½ days of leave without pay. The above figures of leave without pay do not cover the transfers to state pay rolls, nor do they include 64 indefinite furloughs, which were made in December for employees of the technologic branch.

Property accountability.—During the year the system of property accountability by custodians for various branches and divisions was continued and, in addition, a custodian of office property was designated to make an inventory of all nonexpendable property in Washington. This inventory was nearly completed at the end of the year.

The amount derived from the sale at public auction of property examined by inspectors and found unserviceable was $1,418.77. During the preceding fiscal year it was $2,946.29.

Express and freight.—During the year 4,750 pieces of express and freight, of which 1,092 pieces were outgoing and 3,658 pieces were received, were handled by the shipping clerk, who also checked 641 freight and express accounts.

Purchase and distribution of supplies.—The present system concentrates in this section all operations connected with purchases in Washington, such as procuring bids, issuing orders, and preparing vouchers, and requires the services of three persons during most of the time. During the year 2,220 requisitions were handled, which involved the drawing of 2,360 orders. Under the system of drawing the order and preparing the voucher at one operation, the number of vouchers passed was the same as that of orders drawn.

Stationery.—In the stationery room the services of three men are required for handling mails, delivering supplies throughout the office and packing and shipping them to the field parties, and keeping an account of the charges for stationery supplies. During the year 8,913 requisitions for blanks, blank books, and miscellaneous supplies were filled from stock on hand and 447 requisitions were drawn on the department for supplies. In addition to this work, 613 requisitions for printing were made on the department, and 397 requisitions for furniture and supplies.

Administrative bookkeeper.—All transactions of the Survey requiring administrative examination and check are handled by the administrative bookkeeper, who acts in the dual capacity of audit clerk and bookkeeper. A satisfactory system of accounts and double-entry bookkeeping was adopted at the beginning of the year, the net results of which are given in the following table of classification of disbursements, the repayments shown in the table on page 91 having been deducted.

Classification of expenditures by the United States Geological Survey for the fiscal year ended June 30, 1908.

Appropriation.	Salaries and wages.	Traveling expenses.	Office furniture and fixtures.	Telegrams and telephones.	Instruments.	Camp outfit.	Subsistence.	Forage.	Erection of testing plants.	Operation of testing plants.
Salaries, statutory	$64,503.45									
Skilled laborers, etc	19,964.45									
Gaging streams, etc	76,335.05	$5,829.01	$565.39	$271.05	$1,330.43	$571.10	$8,277.17	$548.68		
Paleontologic researches	8,883.75	484.86	3.73	1.20	.60	16.05	305.00	221.42		
Chemical and physical researches	17,103.59	23.24	73.40	.30		67.47	13.35			
Preparation of illustrations	16,862.32	2.25	73.83	24.91	8.41		.50			
Report on mineral resources	57,332.76	5,182.41	1,969.94	447.52	185.28	43.94	2,375.90	13.20		
Topographic surveys	176,752.91	24,494.92	719.40	360.47	5,717.13	13,145.73	46,990.02	17,002.40		
Geologic surveys	145,881.87	14,345.72	1,764.36	232.16	2,923.60	7,414.11	11,619.77	4,113.05		
Mineral resources of Alaska	41,181.84	14,920.62	1,142.96	91.57	262.39	6,271.37	7,523.12	2,329.14		
Geologic maps of United States	65,871.17	50.55	693.44	19.23	45.90		105.60			
Surveying forest reserves	60,628.10	3,895.43	244.20	56.78	1,653.38	2,101.80	11,331.70	8,252.62		
Testing fuel	176,196.91	10,306.40	1,106.53	352.45	1,065.62	389.80	11,031.57	1,366.75	$20,825.29	$12,357.27
Testing structural materials	64,016.22	3,567.36	241.08	579.87	962.68	72.85	2,402.94	3.10	15,127.16	3,034.35
	991,514.39	83,102.77	8,598.26	2,437.51	14,155.42	30,094.22	101,976.64	33,850.36	35,952.45	15,391.62

Appropriation.	Stationery supplies.	Library.	Rent.	Transportation of property.	Photographic material.	Engraving and printing material.	Chemical and physical laboratory material.	Drawing material.	Control material.	Total.
Salaries, statutory										$64,503.45
Skilled laborers, etc										19,964.45
Gaging streams, etc	$1,206.02		$1,120.00	$1,092.71	$601.60		$1,339.34	$48.68		99,136.23
Paleontologic researches	14.00			16.00	20.40		.35			9,967.36
Chemical and physical researches	35.02			30.13	9.96		2,126.13	2.50		19,485.09
Preparation of illustrations	115.03			4.00		$636.27		65.65		17,793.17
Report on mineral resources	1,892.68		512.43	315.08	68.95		796.78	11.35		71,148.22
Books for library	12.76	$1,734.98		26.99						1,774.73
Rent of basement			1,500.00							1,500.00
Rent of office rooms			3,000.00							3,000.00
Topographic surveys	3,891.95		264.07	5,201.03	1,892.31		15.40	524.43	$2,899.11	299,871.28
Geologic surveys	1,553.81		6.00	1,950.23	3,884.86		471.55	344.14		196,505.23
Mineral resources of Alaska	507.67		68.00	4,378.55	662.81		303.10	63.94		79,707.08
Geologic maps of United States	208.56		8.00	75.15		31,791.16				98,868.76
Surveying forest reserves	7,062.70		24.80	730.75	1,075.23		9.26	418.40	49.70	97,534.85
Testing fuel	813.50		97.54	2,708.30	1,093.78		7,998.13	71.50		247,781.34
Testing structural materials	537.06		257.20	3,437.10	517.72		4,147.43	113.08		99,017.20
	17,850.76	1,734.98	6,858.04	19,966.02	9,827.62	32,427.43	17,207.47	1,663.67	2,948.81	1,427,558.44

DIVISION OF DISBURSEMENTS AND ACCOUNTS.

A condensed statement covering the financial transactions of the fiscal year is given below.

Amounts appropriated for and expended by the United States Geological Survey for the fiscal year ended June 30, 1908.

Title of appropriation.	Appropriation.	Repayments.	Available.	Disbursements.	Balance.
Salaries, office of Director	$35,340.00	.....	$35,340.00	$34,603.46	$736.54
Salaries, scientific assistants	29,900.00	.....	29,900.00	29,899.99	.01
Skilled laborers, etc	20,000.00	.....	20,000.00	19,964.45	35.55
Gaging streams, etc	100,000.00	$28,270.73	128,270.73	127,406.96	863.77
Paleontologic researches	10,000.00	3.42	10,003.42	9,970.78	32.64
Chemical and physical researches	20,000.00	4.35	20,004.35	19,489.44	514.91
Preparation of illustrations	18,280.00	10,655.00	28,935.00	28,448.17	486.83
Report on mineral resources	75,000.00	1,147.42	76,147.42	72,295.64	3,851.78
Books for library	2,000.00	.....	2,000.00	1,774.73	225.27
Rent of basement	1,500.00	.....	1,500.00	1,500.00	.....
Rent of office rooms	3,000.00	.....	3,000.00	3,000.00	.....
Topographic surveys	300,000.00	16,418.19	316,418.19	316,289.47	128.72
Geologic surveys	200,000.00	9,022.46	209,022.46	205,527.69	3,494.77
Mineral resources of Alaska	80,000.00	107.34	80,107.34	79,814.42	292.92
Geologic maps of United States	100,000.00	46,802.74	146,802.74	145,671.50	1,131.24
Surveying forest reserves	100,000.00	167.40	100,167.40	97,702.25	2,465.15
Testing fuel	250,000.00	2,806.95	252,806.95	250,588.29	2,218.66
Testing structural materials	100,000.00	945.84	100,945.84	99,963.04	982.80
	1,445,020.00	116,351.84	1,561,371.84	1,543,910.28	17,461.56

LIBRARY.

Accessions.—Inadequate room in the library has forced the continuance of the policy of discarding books to make room for accessions. During the twenty-six years of its existence the library has acquired, by exchange and otherwise, many valuable works that are not wholly of geologic interest. Although these would not be out of place here if shelf room were ample, they have been removed to make room for works more frequently consulted. More to be regretted was the necessity of discarding, on account of their large size, a number of periodicals, including some mining journals; but the discarded books are transferred to the Library of Congress, where they are cared for and made available for reference.

In the Library of Congress the section of geology is unimportant, this subject being left for the Geological Survey's library to cover. The Survey library is therefore coming to be used more and more by geologic students and writers, both resident in Washington and visiting. The readers in the library this year numbered 8,580, and the books loaned, not including those consulted in the library, 9,279.

Owing to the more rigid scrutiny of accessions the increase during the year was less than usual. About 10,000 items, including books, pamphlets, periodicals, and maps, were added. Notable among these are:

Journal of the Royal Microscopical Society of London, 1878–1898. 21 volumes.
Abhandlungen der Naturforschenden Gesellschaft, Halle, 1853–1906. 22 volumes.
Mittellungen der Ungarischen Geologischen Gesellschaft, 1872–1882.

During the year 1,990 complete volumes were added to the accessions record, which on June 30, 1908, shows the library to contain 62,174 volumes. This number is exclusive of the 3,894 numbered volumes that have been transferred to the Library of Congress.

As in past years, the exchange list has been supervised in the library. All publications of the Survey so far as issued have been distributed to its correspondents, from whom a large proportion of the most valuable additions to the library are received, including the transactions of all the known geologic societies of the world, most of the geologic reports issued by governments, many important private monographs, and other publications.

The appropriation of $2,000 for purchase of books enables the library to acquire about 70 periodicals, the principal new publications of geologic interest, and occasionally to add, through purchase from second-hand dealers, some rare out-of-print works long needed.

Catalogue.—About one-sixth of the contents of the library have now been completely catalogued, and printed entries therefor have been incorporated in the card catalogue. All the rest are briefly entered in the library records, and, being classified on the shelves, are available when called for. The complete cataloguing is continued as rapidly as possible, 6,960 volumes having been catalogued and shelf-listed this year.

Practically all the catalogue entries of geologic books (except those of copyrighted books) that are printed on cards for sale by the Library of Congress are supplied by the Survey library, 1,106 of these entries having been furnished during the last year.

A card catalogue of the geologic books in the Library of Congress is also maintained in the library of the Survey, as an adjunct to the catalogue of its own books.

The map catalogue includes about 700 entries, principally of maps published in the United States by the various state surveys, by the Government of Great Britain, and by the geological surveys of Norway and Sweden. It includes also folios of the Geologic Atlas of the United States.

REPORT OF THE GOVERNMENT HOSPITAL FOR THE INSANE.

OFFICERS OF THE HOSPITAL.

BOARD OF VISITORS.

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Hon. WILLIAM A. MAURY.
G. LLOYD MAGRUDER, M. D.
Mrs. G. GARDINER HUBBARD.
Mrs. KATE M. SHARP.
WALTER WYMAN, M. D., *Surgeon-General, P. H. and M. H. S.*
Mr. SCOTT C. BONE.
Brig. Gen. GEORGE M. STERNBERG, U. S. A.
Rev. JOHN M. SCHICK, D. D.

Executive Committee of the Board.

Messrs. GUNNELL, MAURY, and STERNBERG.

Chaplains.

Rev. JAS. R. EDWARDS.
Rev. W. G. DAVENPORT.
Rev. C. M. BART.
Rev. C. O. ISAAC.
Rev. JOHN CHESTER, D. D.

MEDICAL STAFF.

Superintendent.

WILLIAM A. WHITE, M. D.

First Assistant Physician.

M. J. STACK, M. D.

Assistant Physicians.

B. R. LOGIE, M. D.
HARRY R. HUMMER, M. D.
GEORGE H. SCHWINN, M. D.

Woman Physician.

MARY O'MALLEY, M. D.

Junior Assistant Physicians.

ALFRED GLASCOCK, M. D.
WM. L. SHEEP, M. D.
WM. H. HOUGH, M. D.
A. C. FITCH, M. D.
M. EDITH CONSER, M. D.

Medical Internes.

C. R. BELL, M. D.
M. H. DARNALL, M. D.

Pathologist.

I. W. BLACKBURN, M. D.

Psychologist.

S. I. FRANZ, A. B., Ph. D.

Dentist.

A. D. WEAKLEY, D. D. S.

Ophthalmologist.

ARTHUR H. KIMBALL.

Veterinarian.

JOHN P. TURNER, V. D. M.

Steward.

MONIE SANGER.

Purchasing Agent.

A. E. OFFUTT.

Matron.

H. O'BRIEN.

Chief of Training School.

K. E. CRAMER.

CONSULTING STAFF.

Internal medicine.

Dr. S. S. ADAMS.
Dr. G. W. COOK.
Dr. STERLING RUFFIN.
Dr. JAMES D. MORGAN.

General surgery.

Dr. J. FORD THOMPSON.
Lieut. Col. WM. H. ARTHUR, U. S. A.
Dr. G. T. VAUGHN.
Dr. W. P. CARR.

Gynæcology.

Dr. JOSEPH TABER JOHNSON.
Dr. H. L. E. JOHNSON.
Dr. J. W. BOVEÉ.
Dr. I. S. STONE.

Ophthalmologist.

Dr. D. K. SHUTE.
Dr. W. K. BUTLER.

Laryngology.

Dr. C. W. RICHARDSON.
Dr. J. J. RICHARDSON.
Dr. W. A. WELLS.
Dr. F. T. CHAMBERLIN.

Genito-urinary diseases.

Dr. E. F. KING.
Dr. WALLACE NEFF.

Medical zoology.

Dr. C. W. STILES.
Dr. THOMAS A. CLAYTOR.

Bacteriology.

Dr. W. B. FRENCH.
Dr. H. D. GIDDINGS.

REPORT OF THE GOVERNMENT HOSPITAL FOR THE INSANE.

WASHINGTON, D. C., *July 1, 1908.*

SIR: The Board of Visitors of the Government Hospital for the Insane has the honor to submit the fifty-third annual report of the hospital, consisting of the report of the superintendent for the fiscal year ended June 30, 1908, and his recommendations.

Respectfully,

F. M. GUNNELL, M. D.,
President of the Board of Visitors.
WM. A. WHITE, M. D.,
Superintendent, Secretary of the Board ex officio.

The SECRETARY OF THE INTERIOR.

REPORT OF THE SUPERINTENDENT.

MOVEMENTS OF POPULATION.

There were remaining in the hospital on June 30, 1908, 2,733 patients, as against 2,596 patients remaining June 30, 1907, an increase for the fiscal year of 137. This figure is unusually large because of the extraordinary number of admissions during the latter part of the year, and the increase in the number of patients in the hospital can be more accurately estimated on the basis of the average daily population. The figures from this standpoint show that the average daily population for the year ended June 30, 1908, is 2,665, while for the preceding year it was 2,569, showing an increase of 96 in the daily average number of patients for the year. During the year there were admitted to the hospital a total of 643 patients, 24 more than last year, making a total of 3,239 patients under treatment during the year. Of the total number admitted, 342 were from civil life and 301 from the Army, Navy, and Public Health and Marine-Hospital Service. The total number of discharges for the year, including the deaths, was 506, classified as follows: Recovered, 155; improved, 110; unimproved, 33; died, 201; not insane, 7.

These figures, calculated upon a basis of the number of admissions, give the following percentages: Recovered, 24.10; improved, 17.10; unimproved, 5.13; died, 31.25.

The number of deaths, namely, 201, is the lowest since the fiscal year 1901–2, while the percentage, based on the average number under treatment, namely, 7.54, is the lowest since the fiscal year 1886–87.

As regards the admission rate, a notable change in the proportion of District patients has taken place. Whereas the number of admis-

sions of District patients is the smallest of any year since 1901, the number of admissions from other sources is larger than it has been since 1903. During the past five years the relation of the number of District patients admitted, compared with all others, has been, roughly, as two to one, while during the past year, owing to the decrease in the number of District patients and the increase in all of the others, the proportion is almost equal—342 District patients as against 301 patients from other sources.

As regards the total population, it is interesting to recall that Congress made a preliminary appropriation of $50,000 in 1900 for the preparation of plans and specifications for the extention of the hospital to accommodate 1,000 patients. The total number of patients remaining in the hospital on June 30, 1900, the year when this appropriation was made, was 2,076, and the superintendent of the hospital in his report for that year states that "the institution would at the outside accommodate comfortably and conveniently not to exceed 1,600, with the necessary employees." This shows that at that time the hospital had an excess of approximately 500 patients. Comparing the number of patients at that time with the number of patients remaining June 30, 1908, namely, 2,733, it will be seen that there has been an increase of 657 patients, so that the 1,000 beds for which the extension was built are all occupied, and within the past few months it has been necesssary to put additional beds in certain quarters of the institution. During the year the old "Annex," which was built temporarily during the overcrowded condition of the hospital previous to the erection of the hospital extension, has been vacated and the colored patients who were housed there have been transferred to Garfield 2, White Ash, Dawes Basement, and Garfield Basement. In addition to the reoccupation of these four wards, Cypress ward and Dix 1 Building have been reoccupied, after having been thoroughly renovated.

BUILDINGS AND GROUNDS.

The necessary grading has been done, top soil spread, and grass seed sown, completing about 10,000 square yards of lawn on the plateau in the rear of J and K buildings.

In the rear of the Richardson Group, 450 linear feet of new macadam road has been built, 720 feet has been resurfaced, and 1,800 linear feet of cobblestone gutter laid. The necessary grading has been done and about 1,570 square yards of concrete base put in for the new vitrified block driveway near the laundry, and for a smaller driveway in the rear of R and P buildings. One thousand two hundred linear feet of 9 by 12 inch concrete base has been put in and a contract let for furnishing and setting 1,200 linear feet of granite curb for these driveways. One hundred and thirty-two thousand vitrified paving blocks have been purchased for these driveways, and also for the proposed new road to the stable.

A considerable amount of grading has been done in the rear of the laundry and a cinder road built, thus making the rear entrance to the laundry accessible to teams.

Steam tables.—Ten steam tables have been purchased for installation in the serving rooms of buildings B, C, I, K, L, M, N, and R. It is hoped that these will materially assist in getting food to the patients hot.

Manure pit.—A concrete pit for the storage of manure has been constructed near the greenhouses. The liquid contents of this pit are distributed to the flower beds in the different greenhouses by means of a system of pumps and pipes.

Coal storage.—A concrete shovel floor 30 by 130 feet has been laid on an open space adjacent to the power house to provide a place for the open storage of bituminous coal.

Home for male nurses.—The East Lodge Building, which is being remodeled for a home for male nurses, is about finished and will be ready for occupancy August 1. This building has lent itself admirably to remodeling for this purpose, and it is hoped will provide excellent living quarters for about 50 of the male nurses. By removing these men to this building additional accommodations will thus be secured for patients.

Laundry.—About 300 square yards of new cement floor has been laid in the laundry to replace the old wooden floor that was badly decayed.

Sterilizer.—The large sterilizer which was purchased of the Kny-Scheerer Company last year for installation in the laundry has been installed and is in operation. It works very satisfactorily, and is of such size that mattresses can easily be sterilized in it. This is a very valuable addition to the laundry plant and gives us a feeling of security in being equipped to handle contagious and infectious diseases.

Stone steps.—The stone steps to Oak, Walnut, Cherry, and Birch wards, which were in an unsightly condition by reason of being chipped, unevenly worn, out of line and level, were redressed and reset. Substantial iron railings were erected for each set of steps. These were necessary, as in the winter the steps are so slippery as to be a menace to the patients who had to be taken up and down them.

West Lodge skylight.—A large skylight has been installed over the main stairway in the West Lodge. This is an interior stairway, without windows or other openings that admit the light, and before the erection of this skylight it was necessary to light the stairway by electricity.

New plumbing.—The work of installing new plumbing, for which a contract was awarded the latter part of last year, was begun in July, 1907, and finished in January, 1908. Eight toilet rooms were fitted up under this contract; six of these are in the old main building, where the plumbing was not only old and worn out, but was installed in the old-fashioned way, inclosed in wood, so that the lavatories were in a very unsanitary condition. The new lavatories that have been installed all have tile floors with exposed piping and marble partitions.

Fireproofing.—The contract which was awarded last June for the erection of fireproof doors has been completed. Fifteen stairways and 8 fire walls, containing in all 185 openings, were provided with fireproof doors under this contract.

New stairways.—The eight flights of iron stairways contracted for last June have been erected. These stairways replace flights of old wooden stairs to cellars and attics in various locations throughout the old buildings.

Fire engine.—The steam fire engine contracted for last June has been delivered. This is a Metropolitan fifth-size engine, with a

pumping capacity of 400 gallons per minute. To accommodate the new engine some minor repairs were made in the engine house, involving the removal of a brick wall, and the widening of the tracks to suit the wider gauge of the new engine.

Old pump house.—The old building which was formerly used as a pumping station, and which occupied a site a short distance from the present station, has been torn down. This building had reached such a state of dilapidation as to render it unsafe.

New crib.—The old wooden crib at the river, which formed a sump from which the supply of river water used at the hospital was pumped, has been replaced by a concrete pit 16 by 16 by 16 feet. The old crib had a lining of sheet piling driven down into the soft marsh mud. It was found that the pressure outside the crib forced this soft material under the piling and up into the crib, choking the inlet and cutting off the water supply. The new pit has a concrete bottom as well as sides, and a gate controlling the flow from the inlet, so that the supply can be cut off and the pit emptied and cleaned of any sediment that may accumulate. The installation of this new crib is a great addition to the fire protection of the hospital, as water is pumped from this crib directly into the fountain basin at the rear of the main building, from which the fire engine would derive its source of supply in fighting a fire in that neighborhood. This would enable the hospital to throw at least two good streams of water upon a fire, one from the fountain basin and one from the fire mains which are supplied by the river pumps. This is of great importance, as the hospital is dependent upon its own department. It is hoped, however, that this will not continue long, and in fact arrangements have already been made by the District Commissioners to lay an 8-inch pipe up the hill as far as the hospital.

Recitation room.—Carrying out a plan which was formulated some time ago for the remodeling of the old center, one of the rooms here has been fitted up with tablet arm chairs and blackboards as a recitation room for the classes of the training school. This room will accommodate 32 students, and being used solely for this purpose, models, charts, and other appurtenances can be permanently arranged therein.

Gymnasium.—In connection with the hydrotherapy room in B Building a small gymnasium has been installed. This is found to be quite useful and is very much enjoyed by the patients who take the hydrotherapeutic treatment.

Circulating library.—Another one of the rooms in the old center has been remodeled and fitted up with steel book shelving. All of the books in the small ward libraries throughout the hospital have been accumulated, some 400 additional volumes have been purchased, and a circulating library for the general use of the hospital has been established here. The library has approximately 3,000 volumes; it has been completely catalogued and a printed copy of the catalogue is distributed in each ward so that all the patients of the hospital may consult it. The library is in charge of a librarian, who is there Monday and Thursday mornings. The patients are deriving a great deal of pleasure from this source, and a great many books are taken out by them.

Record room.—For the purpose of increasing the storage capacity in the record room, which has been rendered necessary by the growth of the work in this office, a mezzanine floor was installed therein.

Trees.—Last summer groups of dwarf evergreens were planted in front of B and C buildings. They have all done well and added materially to the appearance of the grounds. Several evergreens were also planted about N and P buildings. Three hundred and forty trees were purchased in April for the purpose of establishing a nursery. These include 175 shade trees, 65 flowering trees, 30 of pendulous habit, 50 Japanese maples, and 20 evergreens. These have been planted and are doing well. These trees can be moved at the proper season and planted about the new buildings where there is need of shade.

Amusement hall.—Congress has made an appropriation for an amusement hall, and plans have been drawn and bids for its construction have been asked.

ENGINEERING DEPARTMENT.

Electrical.—The work of the electrical engineer has been largely confined to repair and renewal of the present installation and to changing over wiring in buildings that were being remodeled. During the year this department has answered to 1,803 repair calls. The motors used in heating and ventilating the new buildings were entirely overhauled previous to the winter season, as were the various ventilating fans that are used throughout the hospital. The motor used to drive the Sturtevant fan for ventilating the tunnels was temporarily connected up in September last and permanently connected in the following April. Sixty-four incandescent lamps in the detached dining hall have been replaced by four arc lamps. The installation of electrical wiring has been completed in the East Lodge and a number of changes in the locating of lighting fixtures, necessitated by construction work in the various parts of the hospital, have been completed.

Plumbing.—The work of the plumbing department has been largely confined to repairs and renewals. Independent hot-water lines have been run from the heaters in both buildings B and C to the continuous baths, so as to obviate the possibility of sudden changes of temperature.

Sewers.—In the main the work on the sewers has been repair work, but in several instances sewer lines have been changed so as to improve the existing conditions.

Steam fitting.—The steam lines and traps in the new tunnel have been overhauled. Utensil sterilizers have been installed in the operating room. The balance of the work in this department has been, in the main, repairs and renewals.

Water system.—The new reservoir at the pumping station has been connected up, the wells cleaned out, and the output of water from them materially increased. For some weeks past the engineer has been experimenting with these wells for the purpose of increasing their efficiency if possible. The results up to the present time have been encouraging. From time to time where it has been necessary to dig up valves on the water pipes throughout the grounds, man-

holes have been built so that these valves in future will be more easily accessible. The new crib at the river has been finished, as previously mentioned. The water supply at the river has been overhauled, and the fire hydrants kept in constant repair.

Boiler house.—The old boiler house has been shut down for the summer season, the connection between it and the new boiler house having been put into service.

Machine work.—The work of the machine shop has been in the main repair work. Many of the machines throughout the hospital have been repaired, while the pumps and compressors at the pumping station and the pumps at the ice plant have all been overhauled and put in good condition.

ADMINISTRATIVE DEPARTMENT.

OFFICE OF THE STEWARD.

In the steward's office the work of bringing the accounting system into conformity with the most approved business methods, which was described in the last annual report, has been continued. The first of the year will mark the beginning of the end of this work, when changes will be made in the financial office that will finish the remodeling of the entire accounting system of the hospital. The analysis of the work of the hospital has been a long and tedious task, but from now on it is hoped that we will be able to obtain some satisfactory results in cost accounting. In connection with the analysis of the accounts of the hospital a study of the relations of the various employees has been made, so that a classified table of all the positions in the institution might be made a basis for our pay roll.

In connection with advertising for annual supplies for the hospital 98 items were added to the list upon which bids were solicited, making a total of 575 items on which prices were asked.

Matron.—The matron has furnished monthly reports of the work of the sewing and mending rooms. There has been set aside in the basement of the old center building a condemning room. This is expected to prove of great benefit, the aim being to collect all the condemned material in one place, thus precluding the possible use of condemned articles over again, or any misappropriation.

Mattress shop.—The number of mattresses made during the past year was greatly increased over previous years, due to the opening of new wards and the increase in population.

Laundry.—The laundry is now on a much better basis than ever before. During the year is has turned out an average of 48,000 pieces per week, and an analysis of the cost of doing this work indicates that it is being done at a reasonable figure. During the year, besides putting into operation a new steam sterilizer, there have been installed a Bishop starcher and a Newark shirt-ironing machine. The machinery has been gone over, several of the washers have had new jackets put on, and one of the mangles a steam top attached.

Tin shop.—The various tin roofs of the hospital have been gone over and kept in fairly good shape, so that there are very few complaints of leaking roofs. The tin shop is now manufacturing many articles that previously were purchased.

MEDICAL AND SCIENTIFIC DEPARTMENTS.

Training school.—During the past year the training school graduated 17 nurses, 5 men and 12 women. While this is about the average number graduated each year, we could, to advantage, use more nurses than we have, especially male nurses. The efficiency of the ward service is undoubtedly very materially increased by educating our employees in their work. At the present time, out of a total of 86 wards of the hospital, 43 are in charge of nurses. While it would be desirable to have all of the wards in charge of graduates, still this number permits all of the wards where there are acute cases of insanity or serious illness, together with the infirmary wards, to be in charge of trained employees.

The last annual report recorded placing two of the four wards of the male infirmary in charge of female nurses. This experiment proved so satisfactory that all of the four wards of this building are now in charge of women nurses. It is probable that additional male wards will be placed in charge of women, as the result of our experience in this building, and also because of the fact that a materially larger proportion of women qualify by taking the training.

Hydrotherapy.—In the hydrotherapeutic department 1,199 patients have received a total of 22,210 baths.

Ophthalmologist.—The ophthalmologist, Dr. A. H. Kimball, reports that he has made in all 59 visits to the hospital during the year. The following is a list of examinations and treatments: Eyes, including 179 refractions, 427; ear, 90; nose and throat, 105; operations, 8; total, 630.

Dentist.—The dentist, Dr. A. D. Weakley, reports that during the year he has examined and treated a total of 602 patients. The character of the work done is shown in the following table:

Dental work during the fiscal year ended June 30, 1908.

Roots and teeth extracted	330
Mouths cleaned	51
Silver fillings	80
Cement fillings	29
Gutta percha fillings	77
Teeth treated	268
Nerve removed and canals filled	6
General anesthetic	1
Local anesthetic	6
Artificial sets of teeth, new	4
Artificial sets of teeth, repaired	7
Gold and porcelain crowns, new	2
Gold and porcelain crowns, repaired	1
Bridge repaired	1

Photography.—The photographer reports that during the year he has taken 450 photographs of patients and 394 photographs of pathological specimens and miscellaneous subjects.

Contagious and infectious diseases.—During the year there were 9 cases of measles, 4 cases of German measles, 1 case of mumps, 1 case of typhoid fever, and 2 cases of malaria in the hospital. The cases of measles were immediately isolated when discovered, so that no spreading of the disease occurred throughout the institution. The case of typhoid fever was a male employee, and on investigation it was traced to outside sources.

Surgery.—The following is a list of surgical operations which were performed during the year with the results in each case. In addition to this list about 400 minor surgical cases were treated during the year.

Surgical operations performed during the year.

Operation.	Male.	Female.	Total.	Result.		
				Recovered.	Improved.	Died.
Amputation of breast and resection of rib		1	1	1		
Amputation of rectum		1	1			1
Amputation of toe	1		1	1		
Appendectomy	1		1	1		
Cauterization of rectal ulcers	1		1	1		
Curetment of uterus		2	2	2		
Cystotomy	4		4	1	2	1
Excision of chronic abscess of thigh		1	1	1		
Excision of infected cervical glands	1		1	1		
Excision of rectal fistula	2		2	2		
Gastroenterostomy		1	1	1		
Gastrotomy	2		2	2		
Hemorrhoidectomy	1	1	2	2		
Herniotomy, right inguinal	1		1	1		
Hysterectomy		1	1	1		
Incision of abscess of axilla	1		1	1		
Incision of abscess of back, cold		1	1	1		
Incision of alveolar abscess	5	2	7	7		
Incision of infected inguinal glands	3		3	3		
Incision of ischio-rectal abscess	4		4	2	2	
Incision of leg for phlegmonous inflammation		1	1	1		
Incision of tuberculous synovitis		1	1		1	
Laparotomy for abscess of pancreas	1		1			1
Laparotomy for intestinal obstruction	1		1	1		
Multiple incisions of infected hand	1		1	1		
Multiple incisions of scalp and face for erysipelas		1	1	1		
Mastoidotomy	1		1	1		
Lumbar puncture	3	5	8	8		
Paracentesis abdominis		1	1		1	
Perineorrhaphy		2	2	2		
Removal of bullets from scalp and back	1		1	1		
Removal of infected testicle	1		1	1		
Removal of keloids	1		1	1		
Removal of lipoma of thigh	1		1	1		
Suturing of triceps and brachialis anticus muscles	1		1	1		
Thyroidectomy	1		1			1
Tonsillotomy		1	1	1		
Tracheotomy	1		1			1
Trephining of skull for cerebral cyst	1		1	1		
Trephining of skull for localized meningitis		1	1	1		
Urethrorhaphy		1	1	1		
Wiring of fracture of tibia	1		1	1		
Total	43	25	68	57	6	5

Tuberculosis.—Tuberculosis has been diagnosed in 11 cases during the year. This is a quite satisfactory showing, as will appear in the analysis of deaths from tuberculosis in the report from the pathological laboratory. It will be seen that there has been a material decrease in the number of cases throughout the hospital.

A porch for colored tubercular patients has been constructed in the rear of Oaks D ward. It is inclosed in glass similarly to the other sun parlors in different parts of the hospital, and accommodates 8 patients.

Vaccination.—During February and March about 200 patients and employees were vaccinated. At this time there were some cases of smallpox in the city, and as the major portion of the hospital population had been recently vaccinated only such additional cases as might be going and coming to the hospital and who might convey the disease were vaccinated.

Staff meetings.—On the 15th of April last the following circular letter was sent to the various members of the medical staff:

To the Medical Staff: The receipt of this letter will inaugurate a new system of staff meetings, which will be held daily, with the exception of Sunday, at 11 o'clock a. m., the Sunday meetings being hereby discontinued. The meetings will be presided over by the superintendent, or in his absence by the first assistant physician.

It is believed to be for the best interests of the patients, for the greater protection of the public, for safe-guarding the interests of the hospital, and for the promotion of the scientific knowledge of insanity that the members of the staff meet at stated intervals for the purpose of holding consultations regarding the several patients under their care. These meetings are for the purpose of arriving at diagnoses where possible, of discussing the advisability of paroles and discharges, and in general dealing with all questions relative to the mental and physical condition of the patients and the best methods of their treatment. To these ends there will be prepared in the office a list of all patients as they are admitted, and so soon as their histories have been written they will be read at staff meeting, when the conclusions of the writer may be criticised and corrected. This will provide a ready means of checking up the histories, as it will be expected that the history will be presented in each case within a reasonable time after admission. In every instance where the question of recovery is involved, or parole or discharge from the hospital is under consideration, the case shall be reported in full at conference for the purpose of inviting the opinions of the several members of the staff. From time to time cases about which difficulties arise may be presented for the opinion of the several members of the staff, and autopsy reports and further histories will be in order, especially as justifying, or otherwise, clinical diagnoses.

Each senior member of the staff will be called upon to express an opinion in every case presented, and a stenographer will be present at the meetings for the purpose of recording these opinions. These opinions will be briefed by the stenographer and presented to the first assistant physician for his O. K., after receiving which they will be filed with the records of the respective cases under the title of "Conference report."

Since the date of the above letter staff meetings have been held regularly every morning, except Sunday, at 11 o'clock. It has been found by experience that all of the work outlined in the above letter can hardly be done at these meetings, the number of cases under consideration is so great. Preference, therefore, is given to the cases of patients who are recommended for discharge. No patient is now discharged from the hospital without having his case read in full at the staff meeting, and the patient himself being present, so that he may be questioned by the different members of the staff.

It is felt that the discharge of a patient from a hospital of this sort, often, at least, involves grave responsibilities, and our experience thus far in the staff meetings is that these responsibilities are met in a much more satisfactory manner by the thorough discussion that the cases thus receive.

PATHOLOGICAL DEPARTMENT.

During the fiscal year ended June 30, 1908, 128 post-mortem examinations were made, about 64 per cent of the total number of deaths. Of these, 44 were senile dementia, 13 of dementia præcox, 11 of chronic dementia, 10 of chronic melancholia, 12 of paresis, 7 of epileptic insanity, 6 were noted as arterio-sclerotic dementia, 4 of chronic mania, 4 of imbecility, 2 of manic depressive insanity, 2 of involutional melancholia, 2 of organic dementia, and 1 case each of acute mania, goitrous psychosis, exhaustion psychosis, psychosis of Addison's disease, periodic mania, acute mania, terminal dementia, alcoholic dementia, acute confusional insanity, post-apoplectic dementia, and acute delirious mania. These terms still show the

influence of the older nomenclature which in some instances has not been changed. Of the number, 99 were males and 28 females; the youngest a female of 17 years, the oldest a man aged 93 years.

The number of cases of senile dementia is far greater than of any other form, being of course correlative with the advancing years of many of our patients. So, also, is the number of cases of arterio-sclerosis, various degrees of which were found in 76 cases; softening of the brain dependent thereon were found in 23 cases. Acute white softening of thrombotic origin, with extensive destruction of the brain, had caused sudden death in 3 cases. Intracranial hemorrhage was found in 4 cases, of the cerebrum in 2 cases, of the meninges in 1 case, and of pons and medulla in 1 case. In 1 case an intradural hemorrhage had taken place in the dorsal portion of the cord. The principal meningeal changes were 18 cases of internal pachymeningitis of various degrees, 1 case of secondary meningeal tuberculosis, 1 of fibrino-purulent lepto-meningitis. Chronic meningeal changes in some instances appearing sufficient to cause the mental failure were found in many cases, and the meningo-encephalitis of paresis was demonstrated in all cases of this disease. Two cases of chronic meningitis with cerebral atrophy and arrest of development were found in marasmatic and paralytic patients aged respectively 17 and 18 years. The brain in these cases weighed 663 and 730 grams.

The conditions of the heart were as follows: In 18 cases the organ weighed 340 to 400 grams; in 22 cases the weight was 410 to 600 grams; only one weighed as high as 750 grams. The smallest heart weighed 90 grams, occurring in a marasmatic youth aged 18 years. Only 5 hearts weighed less than 200 grams; 33 weighed less than the normal average. Valvular disease either as incompetence or stenosis or as chronic deformity of the valves was noted in 28 cases. Minor pathological conditions of the valves which could not have produced symptoms have not been included. There were 9 cases of chronic interstitial myocarditis, which in some instances had caused sudden death. Four cases of aneurism of the aorta; in 1 case rupture of the sac into the pericardium.

Pulmonary tuberculosis showed a gratifying reduction since last year and for many years previous. Active pulmonary tuberculosis was only met with in 12 cases; intestinal auto-infection in 5. Latent tubercular lesions were found in 15 cases. Taken with the cases which did not come to autopsy there were only 15 cases of active tuberculosis of the lungs out of 200 deaths during the year. The table of analysis of deaths from the disease and cases in which it was found at autopsy is continued herewith.

Analysis of deaths due to tuberculosis for fiscal years ended June 30, 1885–1908.

Date.	Deaths.	Post-mortem examinations.	Cases not examined, post-mortem.	Deaths due to pulmonary tuberculosis.	Well-marked tubercular cases, post-mortem.	Cases of latent or limited pulmonary tuberculosis found in autopsies.	Total of pulmonary tubercular cases examined, post-mortem.	Cases of tuberculosis among those not examined by autopsy; based upon clinical diagnosis.	Total of all cases of death with pulmonary tuberculosis, clinical and post-mortem.	Percentage of tubercular cases among those that died; recognized clinically and at autopsy.	Percentage of those examined, post-mortem, which showed tubercular lesions.	Cases which died of other diseases than tuberculosis.
1885	105	69	36	13	18	3	21	2	23	21.9	30.4	92
1886	102	72	30	24	26	1	27	8	35	34.3	37.5	78
1887	92	49	43	13	9	1	10	9	19	20.6	20.4	79
1888	120	79	41	14	14	6	20	8	28	23.3	25.3	106
1889	114	67	47	23	19	3	22	10	32	28.0	32.8	91
1890	140	108	32	20	22	10	32	6	38	27.1	29.6	120
1891	128	79	49	21	13	5	18	13	31	24.2	22.7	107
1892	153	96	57	13	13	9	22	9	31	20.2	23.0	140
1893	181	117	64	22	34	9	43	8	51	28.1	36.7	159
1894	167	115	52	28	27	13	40	13	53	31.7	34.7	139
1895	179	125	54	18	20	6	26	11	37	20.6	20.8	161
1896	187	119	68	21	23	11	34	12	46	24.6	28.5	166
1897	162	90	72	13	15	4	19	9	28	17.2	21.1	149
1898	197	85	112	19	17	3	20	14	34	17.6	23.5	178
1899	193	81	112	31	22	3	25	20	45	23.3	30.8	162
1900	184	94	90	25	17	6	23	10	33	17.9	24.4	159
1901	226	109	117	31	27	14	41	16	57	25.0	37.8	195
1902	177	92	85	19	20	7	27	7	34	29.3	29.0	158
1903	258	125	133	36	25	18	43	15	58	22.5	34.4	222
1904	243	103	140	28	15	5	20	13	33	13.6	19.4	215
1905	236	114	122	28	18	6	24	12	36	15.2	21.0	208
1906	202	114	88	29	18	11	29	11	40	19.8	25.4	173
1907	216	128	88	33	16	15	31	17	48	22.2	24.2	184
1908	201	128	73	14	12	15	27	4	31	15.4	21.0	187
Total.	4,163	2,358	1,805	536	460	184	644	257	901	21.6	27.3	3,628

Other pulmonary diseases were 1 of pneumonia following la grippe, 5 of broncho-pneumonia, 7 of pulmonary gangrene, 1 of chronic bronchitis, and in a number of cases debility and chronic bronchial catarrh had resulted in hypostatic pneumonia, with a catarrhal inhalation exudate.

Interstitial nephritis was of frequent occurrence; there were 57 cases, and the condition entered into the cause of death in 9 cases. Cystitis with pyelo-nephritis was present in 8 cases.

Diseases of the digestive system were 1 case of acute colitis, 2 of calculous cholecystitis, 2 of cirrhosis of the liver, 2 gastric ulcer, 1 of hemorrhage from the stomach, 1 of hemorrhagic pancreatitis, and 3 cases of peritonitis. Two deaths from appendicitis with peritonitis, 1 from Addison's disease.

Tumors were represented by 2 small dural tumors, 2 goitrous tumors, 3 of carcinoma of the stomach with metastasis to the liver and other organs, and a number of uterine fibromata, often multiple in the same case.

During the year considerable time has been devoted to the preparation for publication of a work on "Illustrations of Gross Morbid Anatomy of the Brain in the Insane." This work is now in the course of publication by the hospital; it consists of a selection of 75 plates, with an introduction and explanatory text for each plate. The plates are the result of careful photographic reproduction of pathological specimens, many of which have been carefully retouched and worked over in crayon on bromide enlargements and afterwards rephotographed for the work. The subjects illustrated are arterial diseases,

arterio-sclerotic softenings, hemorrhages, atrophies, general paralysis, meningeal states, scleroses, hydrocephalic conditions, and intracranial tumors. The work is for gratuitous distribution, being the second publication of the kind issued by the hospital.

A study is now in the course of preparation treating of the gross pathological conditions of the brain and its envelopes in 200 cases of epilepsy, this being the number of epileptics which have come to autopsy since the establishment of the pathological department. The preliminary notes of this study show that a considerable number of cases of the disease originated in gross malformations, as in early acquired pathological conditions of the skull membranes and brain.

Another work on which much has already been done is the continuation of observations on internal pachymeningitis. This subject was first made the basis of a paper published in the annual report of the hospital in 1897, in which 197 cases were reported; again in a paper read before the District Medical Society, 1904, the subject was taken up and 61 additional cases were added. Since then 72 cases have been added to the list, making in all 330 cases of the disease, comprising all stages from the earliest manifestation to the final stage of hæmatoma and hygroma. A few histological studies, and possibly some experimental work, will complete this study which may then be published.

Two cases of chronic meningo-encephalitis with extreme cerebral atrophy and marked degeneration of the descending tracts of the spinal cord, occurring in early life, are at present under study.

The technician in microscopical technology reports that during the year 1,200 microscopic slides have been made, comprising the study of 6 cases of paresis, 5 spinal cord conditions, and other work for diagnostic purposes on the conditions of organs, diagnosis of tumors, etc.

Clinical pathology.—The clinical branch of the department reports that during the year 843 urinalyses were made, with negative results in 533 cases; positive in 310. Of the lesions found there were 115 of nephritis indicated by albuminaria and casts, 54 of albuminaria of undetermined character, hematuria in 4 cases, sugar in 3 cases, and specific urethritis in 2 cases. The diazo-reaction was done in 1 case, cystitis was discovered in 113 cases, inflammation of uncertain location in 12 cases.

Blood examinations for the plasmodium malariæ were made in 80 cases, resulting in finding the parasites in 21. Blood counts were done 34 times; for leucocytes 18 times, for determination of the red cells in 15 cases. Hemaglobin tests were made 20 times.

Sputum was examined in 80 cases, the bacillus of tuberculosis found in 9; the other sputum examinations made were not significant of any special form of disease. Stomach contents were examined in 4 cases, resulting in finding hyperchlorhydra in all.

PSYCHOLOGICAL LABORATORY.

During the year there have been examined by the psychologist, both on the wards and in the laboratory, about 90 patients who have presented unusual conditions of difficulties of diagnosis. These examinations are aside from those that were made for the purpose of scientific investigation.

Investigations.—The psychologist makes the following report in regard to the investigations under way in the laboratory:

(*a*) The careful examination of a number of patients who showed evidence of a psychogenic origin of the mental disease has been undertaken. Two patients of this character have been examined carefully and at length at different times, but up to the present, while I am satisfied of the cause or part of the cause, for their condition, it has not been possible to demonstrate this to the patients and to obtain from them an acknowledgment of the truth of the supposition. In these cases there is underlying the mental disease some hidden set of associations which cause the patients to react in ways that are peculiar to them. In this work a great amount of time is demanded, because of the necessary microscopical observations of the patient and because of the full and free discussions with the patients of the mental phenomena. There is great hope of cure in these cases should it be possible to get the individuals conversant with their condition and the cause therefor, but from the experience gained in the examinations conducted up to the present time it seems to me that this sort of investigation or therapeutics will be carried out most speedily and to the best interests of the patient only when the investigator has immediate charge of the patient with whom the investigation is being done. The daily and almost constant contact which the ward physician has with the patient brings with it a dependence of the patient upon the physician and the confidence necessary to obtain the proper reactions. All the investigations of this character which have so far been published have been carried out by those who were in control of the individuals with whom the work was done, and it may be impossible for an investigator as such to do this character of work. On the other hand, the lack of time, perhaps also lack of method, on the part of the ward physician may place this subject beyond investigation here under the present circumstances. It is intended to continue the work and if nothing more is accomplished its practicability will have been demonstrated. It is impossible, therefore, to set any date at which this work may be completed, for so much depends upon the individual patient and, as has been said, upon the amount of assistance that can be given by the other members of the staff.

(*b*) The investigation of the reflexes in a large number of patients has been begun. So far as I am aware, there have been only incomplete and sporadic correlations of the reflexes in the different forms of insanity, and it is not too much to expect that if a sufficiently large number of patients can be examined carefully the diagnostic value of the reflex changes will be made more apparent than it is at present, or that the valuelessness of the present methods may be demonstrated. Already about 70 patients have been examined, and on each one there have been from 32 to 38 observations made. To complete this work there should be a total of about 700 to 800 patients examined. To make up this number of observations would require constant work for about six weeks, working from five to six hours a day, if an assistant is obtainable, otherwise it will take over twice as long to complete. It should be said that the records already taken were obtained with the assistance of some of the junior physicians, but since the staff meetings have been in progress the time of the junior physicians has been more fully occupied with other matters, leaving them little opportunity for work or assistance of this character. This work was temporarily discontinued on account of the failure of the printer to furnish the requisite number of printed forms, and has not been continued since that time on account of the demands of other work which was in progress.

In addition to the correlation of the reflexes in a large number of individuals, work is in progress on the careful examination of some of the reflexes in certain selected cases. For this latter work I have devised and have personally constructed two pieces of apparatus, one for measuring the time and extent of the knee kick and the time of the muscular contraction causing the knee kick, the other to measure the amount of the changes in the size of the pupil accompanying accommodation and the stimulation of the light and the consensual reflex due to light stimulation. The preliminary stages in the knee-kick investigation have been passed. The apparatus has been several times changed and improved, but now has been thoroughly tested and found satisfactory for measuring the time of the reaction. Since much of this work is mechanical in character, now that the methods have been devised and carefully worked over, it is possible to collect a sufficiently large number of observations and measurements and to finish a part of this work and to get it ready for publication within about four to six weeks, if all the available time is spent upon it, and if the proper kinds of patients can be obtained. So far in the work careful measurements of the time of reaction in two normal individuals has been determined as a working standard. The results show that the average time for one of these individuals is 0.045 second, and for the other, 0.051

second. This time is more constant than that of the simplest voluntary movement. Several years ago I found that in cases of manic-depressive insanity with retardation the time of the knee kick was very much longer than this time from normal individuals, but the methods used at that time were not so accurate as the ones I am now using. Should it be found, however, that there is a regular decrease in the rapidity of the reflex in such cases, and thus the earlier findings be confirmed, we shall have not only a better understanding of some of the conditions in these curable cases but the information will give us the clue to the understanding of what underlies the condition of depression, which is associated with the true retardation. In addition to the investigation of the reflexes in cases showing retardation I am taking up similar work on paretics. The ease with which some of the reflexes are fatigued in paresis, a fact which I discovered some time ago, opens up the possibility of an early diagnosis in this condition, but it is premature to consider the matter settled until many more individuals have been tested.

(*c*) In connection with several members of the staff careful observations have been made in a number of cases with a view to the publication of the results so soon as all the work can be done. One series of such observations has been made on a case of polyneuritis with Korsakow's syndrome. In this case there was no history of alcohol, lead, or other poisoning to account for the symptoms, and the addition of certain hysterical symptoms make the case exceptional and worthy of publication. All the clinical work on this research has been finished. The autopsy and microscopical findings have not yet been reported in full, and until there is a complete examination of the spinal cord and the peripheral nerves it would be unwise to prepare the material for the press. Some sections of the spinal cord and of the nerves have been cut and stained, but a promise of a further examination has been made. So soon as the pathologist has finished the preparation of the specimens illustrating the neurological changes and has written an account of his findings an article embodying the results of the clinical and experimental examinations can be prepared.

(*d*) I have on hand the results of a completed investigation of memory and apprehension in the dementia of arterio-sclerosis. On account of other work this material has not yet been carefully worked over, but it probably needs no additions.

(*e*) I have also gone over the results of an investigation, which was begun about ten years ago, on muscular and nervous fatigue, to determine whether or not it was worthy of publication. I have a mass of records taken on normal individuals which bring out some points that have not hitherto been shown, but as this investigation requires the cooperation of a number of normal persons it may be impossible to finish it here. The calculation of all the records is completed, but there is not sufficient material to warrant the publication of the results that are now on hand.

(*f*) One of the greatest needs I have felt in examining patients has been norms for the sensations from the body. Without careful examinations on a number of normal people the examinations of mental and neurological cases can not well be gauged, and I have begun to collect observations on the skin sense in a few normal individuals with which to compare similar results on the abnormal. The feature most easily noticed and most often studied in pathological cases is a change in the ability to move or to correlate movements, and little attention has been given sensory changes. Many patients complain of certain feelings, often indefinite in character, or of peculiar sensory experiences that have previously been dismissed by asserting the peculiar sensations and feelings are illusory or delusional. All these feelings and sensations must have some basis in the organism, either stimulatory or lack of stimulation. It is with the object of determining the causes of these feelings and sensations in the abnormal that this research has been projected and a beginning made. We must first have the observations in a number of normal individuals, as has been said, and to this end I have already gone over one individual very carefully so as to map out on the body the relative sensitiveness of the different parts. It is necessary in this work to take about one hundred distinct areas for examination, and on each area it is advisable to make at least ten determinations. This makes, with each individual examined, about a thousand experiments, and we need at least ten normal people for this work. Once the data for normal persons have been obtained it will be possible to map the whole body in area of more or less sensitivity, so that in any pathological case a comple e examination need not be made unless the case demands such. The acquisition of results such as are attempted will place us in a position to go over carefully such cases, for example, as show deficient feeling of reality, and instead of using a priori methods will give data showing the association of these disorders with certain sensational changes or the nonassociation with the sensations that have been investigated.

(*g*) At the time of writing the last annual report I noted that I had been engaged in preparing a scheme for the complete examination of the mental condition of the patients. This scheme was adopted and put in force and has been successfully used

since that time. It was later incorporated as a chapter of White's Outlines of Psychiatry, and has been favorably reviewed. It was suggested at the time that an enlargement of the scheme, to make a short book, on the examination of the insane, would be advisable and I collected materials for several chapters. The pressure of other work has prevented the continuation of this work, which is not strictly investigation, but which is undoubtedly part of the function of an investigator and which is just as strictly scientific as a research. Work of this character should not be done rapidly and, if it is advisable to continue it, at least six to eight months will be required for its completion. This is on the assumption that the book should not be written as the daily work, but as the relief work from the daily routine.

(h) The investigation of the functions of the cerebrum, with special reference to the association areas, has not been continued, but it is hoped that time will permit the completion of another section of this work during the coming year. In an earlier paper it was demonstrated that the frontal lobes are concerned with the formation and retention of simple sensory-motor habits, and material is at hand to show that the posterior association areas are also so utilized. From the results in hand it appears likely that the new work will demonstrate that the anterior and the posterior areas are used simultaneously in the formation of habits, but that the functions are different, the anterior being in control of the motor part of the association and the posterior controlling the sensory part. The facts which have been gathered from clinical studies support this view, and during the year I have been gathering clinical material that bears upon this question. This material is so widely scattered in American, English, German, French, and Italian magazines that it will require several months before all of it can be gone over with any degree of thoroughness. The experimental part of the work can be carried on, however, without special regard to the clinical material that may be collected, for the conclusions may be definitely formulated only from the comparison of the experimental and clinical results, and the clinical studies will not influence the validity or the general character of the experimental studies.

PUBLICATIONS.

The following publications by members of the hospital staff have appeared during the year:

By William A. White, M. D., Superintendent:
- Outlines of Psychiatry, pp. vi+232.
- The Nature of Insanity. (Washington Medical Annals, September, 1907.)
- Hospitals and Asylums of Europe. (George Washington University Bulletin, December, 1907.)

By Shepherd Ivory Franz, A. B., Ph. D., Psychologist:
- Examination of the Insane. Being Chapter VII of White's Outlines of Psychiatry, pp. 65–93.
- Psychology at two international scientific congresses. (Journal of Philosophy, Psychology, and Scientific Methods, Vol. IV, pp. 655–659. November, 1907.)
- Ueber die sogennante Dressurmethode für Zentralnervensystems-untersuchungen. (Zentralblatt für Physiologie, Vol. XXI. November, 1907.)
- Two recent international scientific congresses. (Science, n. s., Vol. XXVI, pp. 800–802. December, 1907.)
- A Noiseless Room for Sound Experiments. (Science, n. s., Vol. XXVI, pp. 878–881. December, 1907).
- Neurology at the Physiological Congress, Heidelberg, 1907, and at the Congress for Psychiatry, Neurology, Psychology, and the Nursing of the Insane, Amsterdam, September, 1907. (Journal of Comparative Neurology and Psychology, Vol. XVIII, pp. 91–99. January, 1908.)
- Psychology and the Medical School. (George Washington University Bulletin, Vol. VI, pp. 7–15. December, 1907.)
- The Functions of the Frontal Lobes. (George Washington University Bulletin, Vol. VI, pp. 74–75. December, 1907.)
- A New Method of Artificial Respiration. (George Washington University Bulletin, Vol. VI, pp. 72–73. December, 1907.)
- On Sleep. Review of the views of Claparède. (Journal of Philosophy, Psychology, and Scientific Methods, Vol. IV. pp. 161–164. March, 1908.)

By William H. Hough, M. D., Junior Physician:
- Phlegmonous Gastritis, with Report of Case. (Washington Medical Annals, March, 1908.)

By Monie Sanger, Steward: Perpetual Inventories. (The Bookkeeper, May, 1908.)

FARM AND INDUSTRIAL DEPARTMENTS.

The following is a list of the farm and garden products for the fiscal year which have been turned into the storeroom for general use. Included in these totals is quite a quantity of garden truck from the garden recently laid off back of the Richardson Group:

Farm and garden products.

Apples	barrels	298	Parsley	bunches	16,058
Apples, crab	bushels	5	Parsnips	barrels	197
Apricots	do	3	Peaches	bushels	19
Beans:			Pears	do	27
Lima	do	219	Peas	do	241
String	barrels	262	Peppers, green	do	68
Beets	bunches	10,652	Pork	pounds	12,984
Beets	bushels	97	Potatoes:		
Cabbage	heads	23,301	Irish	bushels	246
Carrots	bunches	5,641	Sweet	do	1,050
Cantaloupes		8,561	Radishes	bunches	30,795
Celery	bunches	19,231	Rhubarb	do	342
Cherries	quarts	605	Spinach	barrels	161
Chickens	pounds	1,314	Squash:		
Corn, green	ears	37,315	Winter		3,747
Cucumbers		5,833	Summer		14,332
Currants	quarts	300	Strawberries	quarts	654
Duck	pounds	1,203	Tomatoes	bushels	1,134
Eggs	dozens	5,702	Turnips	do	1,932
Eggplant		3,000	Clover and timothy hay, green, tons		143
Gooseberries	quarts	10	Ensilage, corn, green	tons	444
Grapes	pounds	11,625	Corn fodder	do	20
Honey	do	611	Corn, ear	bushels	31
Kale	barrels	851	Hay, timothy	tons	2
Lettuce	heads	21,964	Wheat, green	do	35
Milk	gallons	86,484	Clover and orchard grass	do	36
Onions	bunches	54,746	Oats, green	do	41
Onions	barrels	12			
Oyster plant		1,689			

The following list shows the articles made and repaired in the tailor shop, sewing room, mending room, and mattress shop:

Work of tailor shop, sewing room, mending room, and mattress shop.

ARTICLES MANUFACTURED.		ARTICLES MANUFACTURED—continued.	
Aprons:		Cases:	
Barbers	1	Pillow, cotton	3,812
Dining room	27	Pillow, rubber	1
Gingham	212	Chemise	814
Kitchen	250	Cloths:	
Shoemaker and rubber	3	Table, long	135
White	653	Table, short	138
Bags:		Coats:	
Broom	15	Dentists'	2
Clothes	17	Dairy	12
Jelly	23	Jean	574
Bands, flannel	6	Operating	6
Bibs	15	Overall	261
Blouses	790	Cords and tassels	20
Caps:		Covers:	
Nurses', rubber	20	Billiard table	2
Skull	1	Bolster	3
Surgeons'	12	Book	3

Work of tailor shop, sewing room, mending room, and mattress shop—Continued.

ARTICLES MANUFACTURED—continued.	
Covers—Continued.	
Brown linen, table	2
Car	27
Corset	2
Cushion and couch	23
Piano	1
Screen	115
Stand	511
Swiss, bureau	96
Turkey red	3
Curtains:	
Cotton	2
Holland	499
Sash	18
Swiss	68
Transom	19
Drawers:	
Boys' canton flannel	8
Men's canton flannel	2,099
Women's, cotton	416
Dresses:	
Denim	267
Gingham	701
Percale	92
Night, long	251
Night, short	235
Miscellaneous	163
Gowns, operating	11
Jackets, boys'	2
Mittens	8
Pants:	
Boys'	10
Citizen's	586
Dairy	12
Operating	3
Overall	612
Soldier	764
Petticoats:	
Cotton	841
Flannel	3
Pillows	5
Pieces, corner	6
Sacques, dressing	4
Sheets:	
Bath	2
Double	28
Single	4,949
Shirts:	
Boys' under	8
Blue flannel	9
Canton flannel	1,438
Check	2,389
Night	1,011
Shirtwaists, boys'	5
Sides, canvas	2
Skirts:	
Percale	4
Nurses', dress	137
Squares, outing flannel	3
Strainers, linen	53
Strops, razor	6
Suits	3
Suits, canvas	15

ARTICLES MANUFACTURED—continued.	
Ticks:	
Bolster	1
Mattress, double	3
Mattress, single	360
Pillow	360
Towels:	
Bath	2,575
Roller	2,273
Tea	2,699
Underhandkerchiefs	1
Vests	301
Waists:	
Nurses'	46
Under	6
WORK DONE IN MATTRESS SHOP.	
Mattresses:	
Made	360
Made over	533
Mats:	
Cloth, braided	136
Cloth, drawn	48
Cloth, husk	50
Hair renovated ..... pounds..	22,650
Pillows:	
Made	360
Made over	595
Made:	
Cushion, circular	1
Bolster	1
Repaired:	
Clothing ..... pieces..	839
Hose ..... pairs..	1,144
REPAIRS AND MISCELLANEOUS WORK.	
Repaired:	
Clothes ..... pieces..	28,471
Hose, pairs	1,349
Miscellaneous	10,615
Hemmed:	
Blankets	1,939
Napkins	1,376
Made:	
Bands	89
Straps, buckle	2,124
Names sewed on	10,929
Suits pressed	26
WORK DONE IN HOWARD HALL WORKROOM.	
Made:	
Mats	264
Mitts and pads	86
Repaired:	
Clothes ..... pieces..	7,645
Shoes	335
Socks ..... pairs..	505
Chairs caned	156
Heel plates put on	152

STOCK.

The following is a detailed statement showing the work done by the veterinarian during the year:

Work of the veterinarian.

Horses examined for soundness and purchased	5
Cows inspected, tuberculin tested, and accepted	26
Bulls inspected, tuberculin tested, and accepted	2
Cows inspected and condemned as unprofitable	38
Bulls inspected and condemned	2
Horses:	
Surgical cases	30
Medical cases	6
Cows:	
Surgical cases	55
Medical cases	32
Tuberculin test of hospital herd, January 14–15, 1908:	
Cows tested	137
Bulls tested	3
Cows reacting (tuberculous)	1
Operations: Hogs	74

During the year the hospital lost one horse, "Hector," through a street-car accident. His back was broken by a collision and he was humanely destroyed. There were no horses condemned during the year, although two or three are partially unserviceable. Five horses were purchased during the year after being examined for soundness.

Five cows died during the year; 2 of forage poisoning, 1 of indigestion, 1 lymphadenoma, and 1 from traumatic pericarditis. In addition to these 1 cow was found dead in her stall; 1 was destroyed on account of paralysis, and a third on account of rupture of the diaphragm, making a total of 8 cows lost by death, disease, or accident. The herd was given its annual tuberculin test January 14–15, 1908. One hundred and thirty-seven cows and 3 bulls were tested. One cow reacted and has since been destroyed. She had tuberculosis of the liver, the disease being localized. This very small loss is very gratifying and shows that this disease can be admirably controlled by the constant use of tuberculin when purchasing animals, and making a yearly test of the entire herd.

For several years we have known that many of the cows were unprofitable, but it has been a difficult task to discover them on account of the large number of cows in the herd, the uncertainty of the descriptions given by the milkers, and the very unreliable records of the herd. To remedy these conditions a large herd book was purchased, each cow was ear-marked, and a complete description of each animal was entered in the herd book. Since January 1, 1908, the milk of each cow at each milking is carefully weighed and recorded. At the end of the month the production of each cow for that period is recorded in the herd book, which also gives a complete record as to the time of breeding, the birth of each calf, its sex, its disposal, and the final disposition of the cow. By these means we are weeding out the unprofitable cows and are only keeping such as make a fair return to the hospital. Thirty-eight unprofitable cows have been sold during the year, and both of the common bulls.

The total loss to the herd through death, destruction, and sold as unprofitable during the year was 47 cows and 2 bulls. Up to June 30, 26 cows and 2 bulls have been added to the herd through purchase

and 17 cows contracted for to be delivered during July, 1908. There are now 139 cows, 12 calves, and 3 bulls in the hospital herd.

The large number of unprofitable cows was due largely to the age of the herd, which averages over 12 years. A cow's usefulness decreases after the eighth year and there have always been too few cows purchased each year to keep the herd up to its best work.

The hospital now owns 3 registered Holstein-Fresian bulls of the best producing families. Two of these are in service and the third is 7 months old and is kept with the heifer herd at Godding Croft.

There are now 12 heifers started, and every heifer calf from a profitable mother is retained in the herd. Each calf is properly earmarked and registered in the herd book. The calves by the full-blood bulls began to arrive in June, but unfortunately a large proportion have been males. It will be the plan to raise 30 to 40 heifers each year, and if the venture is successful very few purchases of cows will be necessary after 1910.

Plans have been made for a heifer shed for 30 calves at Godding Croft this summer. It is made so that wings can be added as necessary. To supply the herd with new stock it will be necessary to have 60 heifers growing at all times and possibly 75 for the first year or two. By this means the hospital will get better cows and run no risk of becoming infected with tuberculosis. As the grade of cows improves the hospital will get much more milk. To insure an ample supply of milk at least 200 milking cows should be kept at all times. To keep 200 to 250 cows, more of the farm must be utilized for raising roughage and a complete up-to-date system of rotation of forage crops must be adopted. It is realized that there is no pasturage at the hospital farm, and very little at Godding Croft, hence every pound of fodder, grass, silage, etc., must be raised and cut for the cows. It is possible by proper methods to raise an abundance of roughage feed on the farm, with the possible exception of part of the clover hay.

During the past winter all hogs slaughtered on the farm were inspected post-mortem and any parts not healthy were condemned.

LEGISLATION.

While nothing has been accomplished during the past year in the way of actual legislation looking toward bettering the condition of the insane, still a great deal has been accomplished in securing attention to this subject. During the early part of the session of Congress Mr. Olcott, of New York, introduced a bill (H. R. No. 12898), which is intended to remedy some of the existing evils. The principal feature of the bill is the doing away with jury trials in order to commit patients to the hospital, unless such trial is demanded by the patient, or by some one in his behalf. In a report prepared by Mr. Olcott setting forth the reasons for this legislation, a digest of lunacy legislation in each State of the Union is included, and it appears from the digest that in a majority of the States it is not obligatory unless special demand therefor is made. While it was not possible last year to secure the passage of this legislation, the bill was very carefully considered, and was reported upon favorably by the District Commissioners, the Board of Trade, the Chamber of Commerce, and the corporation counsel's office. The amount of publicity

which the manner of committing the insane was afforded by the introduction of this bill, and its consideration by these various public bodies resulted, in addition, to a special report upon the care of the insane in the District of Columbia by the Society of Nervous and Mental Diseases, and also a special report on the same subject prepared by the Board of Charities of the District of Columbia, which latter was printed as a Senate document (No. 283). With all the amount of interest which has been stirred up on this subject, and the public agitation which it has received, it seems reasonable to expect legislation in the near future which will result in a material betterment of present conditions.

It is not necessary for me to discuss further the question of lunacy legislation in this place, as I have been over the whole subject in previous annual reports. It is gratifying to know, however, that reforms in this matter are being agitated in various parts of the United States, and that as a result solutions are coming to the front which must help us. The District of Columbia has been too long in the background in this matter, and it is time that conditions were appreciated and something done.

ESTIMATES FOR THE FISCAL YEAR 1910.

The appropriations recommended for the fiscal year 1909–10 are as follows: For the support, clothing, and treatment in the Government Hospital for the Insane of the insane of the Army and Navy, Marine Corps, Revenue-Cutter Service, inmates of the National Homes for Disabled Volunteer Soldiers, persons charged with or convicted of crime against the United States who are insane, all persons who have become insane since their entry into the military service of the United States who have been admitted to the hospital and who are indigent, including purchase, maintenance, and driving of necessary horses and vehicles, and of horses and vehicles for official use of the superintendent, for the indigent insane admitted from the District of Columbia, and nonresident insane persons under temporary care, the sum of $609,400. This amount is based on 2,770 patients, at $220 per capita. This number is arrived at by estimating the probable increase on the basis of what the increase has been in past years. Pursuing the same method of calculation for the District of Columbia patients, their share is $301,400, leaving $308,000 to be provided for in the sundry civil bill.

The last year shows an increase in the daily average population of the hospital of 96, while the number remaining in the hospital on June 30, 1908, was 137 in excess of the number remaining at the close of the last fiscal year. While the average for the year might hardly indicate that 2,770 patients are to be provided for for the coming fiscal year, inasmuch as the average for the last year was about 2,665, still the population at the close of the year was 2,773, a sudden increase having taken place toward the end of the year. It is of course difficult to say what the next few months will show, but a study of the conditions between now and the time when it is necessary to hand in the estimates to the Treasury Department may indicate the desirability of a revision of the above figures.

For expenses in returning escaped patients to the hospital the sum of $1,500 is asked to be set apart. A decision of the Comptroller prevents the payment of these expenses out of the support fund of

the hospital and makes it necessary that a special appropriation be made for this purpose.

The usual authority should be given in the sundry civil bill to use $1,500 in defraying the expense of removal of patients to their friends on leaving the hospital.

A further provision in the same bill is necessary, authorizing the sum of $1,000 to be used in the purchase of books, periodicals, and papers for the use of the hospital and for the medical library.

For roadways, walks, and grading, $7,500 is necessary to continue the work of grading the grounds and providing roadways, walks, and gutters, and for making necessary repairs and renewals of those already completed.

For general repairs and improvements the sum of $50,000 is asked.

Recent appropriations for repairs that have been granted have been for $35,000. The estimated value of the entire hospital plant is $5,000,000. On this basis of valuation the repair appropriation is seven-tenths of 1 per cent. There have been added to the hospital by the hospital extension 15 new buildings, at a total cost of $1,500,000. This would have left the $35,000 repair appropriation 1 per cent of the estimated cost of the plant previous to the erection of the hospital extension. These buildings, however, have now been built five years, and repairs are beginning to have to be made upon them. It is thought, therefore, that a 1 per cent basis of repair appropriation is entirely reasonable. Repairs must necessarily not only increase as the size of the plant increases but increase with the age of the several buildings. One per cent, which will now meet the necessary repairs, might possibly in future years be inadequate. It is hoped, therefore, that with the increasing size of the institution and with the increasing age of the several buildings a corresponding increase in the repair appropriation may be granted.

For new entrance and gate house $8,000 is needed. The building of the hospital extension, with the location of the offices in the new administration building, has removed the center of the institution from the old main building to the present administration building, and makes it desirable to provide a new main entrance at the northern extremity of the administration group.

For a new dairy barn, together with the necessary roadways and grading, and the extension of heat, light, and water systems, $50,000.

The present buildings, comprising the barns, piggery, and hennery, are located on the east side of Nichols avenue and immediately fronting upon it. Most of these buildings are very old and in a dilapidated condition. One of these barns constantly requires repairs.

A recent investigation of the dairy by an expert from the Agricultural Department showed it in a very unfavorable light, and indicated very clearly that steps should be taken to improve the conditions. This can only be done in a satisfactory and economical manner by constructing a new plant. It is believed that with the present agitation of the milk problem in the District, which is resulting in investigations along the broadest possible lines, it would be advantageous, from many points of view, for the Government to take the initiative in constructing a model and up-to-date dairy plant. There is only one other plant in the District owned by the Government, namely, the Soldiers' Home, which is at the other extreme of the District; and the plant at this hospital is in very poor condition. I believe it should be put in the best condition possible for the reasons

above stated, in addition to the fact that it is of the highest importance that such an important and staple article of diet in the hospital as milk should be of the best quality—fresh, and free from any suspicion of disease. For doing this work, as stated above, $50,000 will be required. I secured the hearty cooperation of the Agricultural Department (to which I desire to extend my thanks) in preparing plans for a model dairy. Its experts have been over the situation and plans have been drawn in the Department and estimates prepared of the cost of construction. It will therefore be possible to go to Congress with the most approved plans for this type of building.

To enable the Secretary of the Interior to purchase additional land for the Government Hospital for the Insane, $50,000, or so much thereof as may be necessary. In the event of his inability to make such purchase, the Secretary of the Interior shall proceed in the manner prescribed for providing a site for the Government Printing Office, in so much of the act of July 1, 1898, as is set forth on pages 648 and 649 of volume 30 of the Statutes at Large, to acquire the land desired; and for the purpose of such acquisition the Secretary of the Interior shall have and exercise all the power conferred upon the Public Printer in such act. This appropriation to be disbursed by the Secretary of the Interior.

The need of additional land for the hospital has been appreciated for some time, and each successive superintendent for many years past has requested appropriations for its purchase. The need of land has become more acute of late because all of the new construction has been placed upon land previously used for farming purposes, thus restricting the output of the farm to such an extent that it is now impossible to raise enough fodder for the dairy herd. The hospital is increasing in size at the rate of upward of 100 patients per annum, and more buildings must be added in the near future, which will still further infringe upon the land used for farming.

For the construction of an epileptic group to accommodate 140 patients, $140,000 is asked.

The hospital has been increasing rapidly in size lately, and the thousand beds for which the hospital extension was constructed are already filled. In certain portions of the hospital we are beginning now to see evidences of crowding. It is, therefore, the part of wisdom to provide for further growth, and in making this provision it is deemed desirable to build such extensions as will enable a better classification of the hospital population. Whereas the epileptics are at present fairly well segregated, they are in wards that were built for a different class of patients. The buildings of an epileptic group can be so constructed as to admit of indefinite extension, and will give this class of patients a character of surroundings much better suited to them than they now have, while the wards they now occupy can be used for the general purposes of the hospital population. The estimated cost on a basis of $1,000 per capita is considered under all present conditions to be reasonable.

For an iron fence to be placed along the frontage of the hospital grounds on the east side of Nichols avenue the sum of $14,000 is needed. This portion of the hospital grounds is occupied by four buildings of the hospital extension, which contain approximately 350 patients. There is now along the thoroughfare a dilapidated, unsightly wooden fence, which it is desired to replace with a substantial iron one.

For centralizing power and heating plant, remodeling the electrical layout, and substituting electrical driven for steam-driven machinery in certain places, and for certain other purposes, $100,000 is asked at this time, although the cost of all the changes contemplated will probably exceed this figure by approximately $45,000.

There are at present two centers for heating the hospital buildings—one, the old boiler house, which was and still is used for the old hospital buildings, the other, the new power, heating, and lighting plant, which furnishes heat to the hospital extension. A more economical operation of the heating system would result from centralizing these two power houses. The coal would not require as much handling, and a smaller force of firemen would need to be employed, while at the same time the heating system could be operated to better advantage and greater efficiency. The old boiler house is a very old building and many of the boilers in it are at present pretty well worn, so that in the course of a comparatively short time they will in any case have to be replaced. At the same time the boiler capacity of the new power, heating, and lighting plant is already hardly equal to supplying the buildings of the new hospital extension with sufficient heat during the coldest part of the winter, so that additional capacity is already required. It would seem, therefore, that the rational thing to do would be to centralize all the heating apparatus in one building.

In addition to the reasons set forth above for granting this appropriation the very important additional reason exists that the plant is too large a plant in which to use the direct current for distribution. The alternating current can be used to much better advantage, both as regards economy and efficiency. While this alone might not be sufficient reason for its installation if the plant were to remain as it is, still it becomes a very potent reason as soon as additions to the plant are contemplated. For example, the immense copper mains that run to the Richardson group are all loaded to their full capacity, and should it be desirable to place an additional building in connection with this group it would be necessary to run a feed wire from the power house to this building, a distance of approximately three-fourths of a mile. To run a wire large enough to distribute direct current with a sufficient margin for a reasonable increase would mean an immense outlay of money with no commensurate gain in results, in fact with a distinct loss, as it is impossible to run a direct-current feed this distance without some leakage, while with the alternating current there is practically no leakage at all. This particular question has arisen in connection with the building of the new amusement hall, the appropriation for which has been granted. In order to light this hall with direct current a very material sum of money will have to be expended for this purpose alone, while with the alternating-current installation the cost of running the mains from the power house would be relatively inconsiderable.

Another reason for this change is the fact that the direct-current mains that were installed in the tunnels of the new extension have largely had their insulation destroyed by the combination of heat and moisture therein. Under the conditions maintained in these tunnels electric wires should not have been installed, at least unless they were lead-covered. It seems therefore that in connection with removing the wires from these tunnels, which will certainly have to be done sooner or later, the reasonable thing to do is to change the whole

installation to an alternating current at the same time. Another condition that maintains, and which is dangerous to the integrity of the present installation, is the wooden conduit which carries the steam lines and electric cables from the power house to the hill above. This is extremely dangerous, and if it caught fire the institution would run the risk of being deprived of both heat and light. At the time the other alterations were made, as described above, this defect could also be corrected.

The plan of procedure is to lay terra-cotta conduit in cement and run lead-covered wires in this conduit, gradually substituting at the power house alternating generators for the direct-current generators now in use, and as various circuits are completed taking the large copper wires out of the tunnels entirely, so that the electrical and steam mains will be permanently separated. These changes contemplate not only the consolidation of the power plant as it at present stands with the boiler house so as to have the power and heating plant under one roof, but also contemplates running wires to the pumping station and substituting electrical-driven machinery there for that at present in use. This will centralize the power, heat, and lighting plants in one place and result in material gain both in economy and efficiency.

The general plan of this work has been figured out to cover three years, as follows:

Estimates for remodeling heating and lighting plant.

SUMMARY FOR FIRST YEAR.

Consolidating boiler rooms	$49,000
Installing stokers	17,000
Installing new A. C. generator, switchboard, transmission lines, and transformers	13,000
Building conduit	2,000
New motor-driven air compressor	10,000
New motor-driven pumps for condensing water	1,500
New auxiliary main	5,000
Total	97,500
Less value of old apparatus	5,000
	92,500

SUMMARY FOR SECOND YEAR.

Building conduit	4,000
Replacing generator and installing new transmission mains, transformers, etc	20,000
Replacing D. C. motors with induction motors	10,000
New pumps for pumping well water	2,500
New arc lamps	500
Total	37,000
Less value of old apparatus	10,000
	27,000

SUMMARY FOR THIRD YEAR

Replacing small generators with new A. C. generators	8,000
Installing new switchboard, transmission, etc	5,000
Relay air compressor at pumping plant	10,000
Replacing D. C. motors with induction motors	8,000
Total	31,000
Less value of old apparatus	5,000
	26,000

SUMMARY OF ESTIMATES.

Support	$623,700
Roadways, walks, and grading	7,500
General repairs and improvements	50,000
New entrance and gate house	8,000
New dairy barn, with necessary roadways, etc	50,000
Additional land	50,000
Iron fence on east side of Nichols avenue	14,000
Centralizing power and heating plant, remodeling electrical layout, etc	100,000
Construction of an epileptic group to accommodate 140 patients	140,000
Total	1,043,200

MEDICAL STAFF.

Appointments.—During the year four medical internes, three males and one female, were appointed from the civil-service register of eligibles. They were David G. Willetts, M. D., Clarence R. Bell, M. D., William L. Sheep, M. D., and M. Edith Conser, M. D.

Separations.—Dr. David G. Willetts, medical interne, resigned December 31, 1907, to accept the position of pathologist of the Georgia State Sanitarium, at Milledgeville, Ga. Dr. M. H. Darnall, medical interne, resigned January 31, 1908, to enter private practice. Dr. William N. Mebane, medical interne, resigned July 16, 1907, to enter private practice at Hillsboro, N. C.

Promotions.—Dr. M. Edith Conser was promoted from the position of medical interne to the grade of junior assistant physician on October 1, 1907. Dr. William L. Sheep was promoted from the position of medical interne to the grade of junior assistant physician on April 1, 1908.

Assignments.—Dr. Nicholas J. Dynan, medical interne, was detailed July 27, 1907, as acting assistant surgeon, Public Health and Marine-Hospital Service, and assigned to Ellis Island, N. Y., to assist that branch of the Service in the detection of insane immigrants. He succeeded in this position Dr. Alfred Glascock, who, after a like detail at Ellis Island, has returned to his duties at the hospital.

GENERAL CONSIDERATIONS.

The rapid and continuous growth of the hospital necessitating the gradual filling up of the various wards, the providing of additional beds, with the general result of an elimination of the amount of space available for future expansion, forces us to consider the problem of taking care of the future. I am reminded in this connection that from time to time in the history of the institution when a new building has been erected, it has been supposed that that building was going to be the final necessity, and that no further expansion would take place. In each instance, however, these predictions have proved to be erroneous, and when we consider that already the thousand beds for which the hospital extension was built are filled, and that on June 30, 1908, there were 137 more patients in the hospital than on the corresponding date of the preceding year, it becomes a matter of ordinary precaution to endeavor to forecast future growth and to prepare to meet it. Unlike those who have gone before, I can see no reason for expecting a cessation in the increase in the number of insane from the several sources from which this hospital derives its population. The

personnel, both of the Army and Navy, is gradually increasing, and the probabilities are that it will further increase in the future, while the chances are greatly against any decrease in this direction. The population of the District of Columbia is increasing materially each year. Last year the police statistics indicated approximately an increase of 9,000, and the only source from which we may expect decrease in the number of patients is from the National Homes for Disabled Volunteer Soldiers. The veterans of the civil war are dying off very rapidly, but even at the rate of their present decrease it will be several years before they all disappear, and I believe that the increase in the Army, the Navy, and the District of Columbia in the years to come will more than make up for the decrease from the Soldiers' Homes.

It will readily be seen, therefore, that the time has come when the problem of the Government Hospital for the Insane should be considered in the large, and a broad and consistent policy outlined for its future development. The female department of the hospital is already filled beyond its nominal capacity, while the male department is using practically all of the available buildings and wards. The frame building known as the "Annex," which was built some years ago as an emergency construction, it has only been possible to vacate recently, and it is still doubtful whether it will be policy to tear it down or not, notwithstanding the fact that it is a type of building which ought not to be maintained upon the hospital premises.

We are thus approaching already a condition of crowding in the hospital, a condition the evils of which we know only too well, because we have so recently escaped them. I may say, I think without fear of contradiction, that crowding in an institution of this character is of all single evils perhaps the greatest. It interferes in every way with the highest efficiency in the care and treatment of patients, and brings about those conditions of stir-up and unrest among the population that gives rise to all the petty disturbances and annoyances that keep an institution constantly in a turmoil of complaints. I may mention a single condition from which the institution has been free now for over two years, very largely I believe from the lack of overcrowding. I refer to the fact that during this period of time there has not been a single suicide in a population aggregating over 3,000 patients each year. Unless, therefore, some consistent scheme of expansion is formulated for the future we are threatened with all of these evils which impair the efficiency of an institution of this sort.

The policy which is so often pursued with reference to hospitals of adding piecemeal a building now and again when the population becomes overcrowded is far from being the best way to deal with the problem. The method of growth should be along broad and well-defined lines, and not a piecemeal, patchwork affair, expressing itself only in emergency procedures of building.

As regards the size of an institution of this sort which can be efficiently and properly maintained, there is much difference of opinion. Personally I am a believer in large institutions, in the main because of the economic advantages that result. The buying of supplies, it goes without saying, will be cheaper for a large institution than a small one, while the top cost in all departments is materially lessened. At the same time departments which are valuable may be maintained at a relatively inconsiderable cost in a large

institution where their cost of maintenance would be prohibitive in a small one. For example, scientific departments costing $5,000 or $6,000 a year can be readily maintained in an institution spending $600,000 or $700,000 annually, but might well be too expensive for an institution expending only $100,000 per annum. I see no reason why, provided the scheme of administration is changed to admit of large expansion, an institution of almost any magnitude might not be efficiently administered. Nothing of course but failure would result, however, if an effort were made to carry on such an institution along the same lines with reference to its administration that are efficient in a small institution. I may say in regard to this matter of administration that in the various changes that I have made in the administrative department of this hospital I have kept this problem constantly in mind, and that the administrative department is in a condition which will enable it to grow indefinitely and adapt itself to the conditions of an ever increasing hospital with a minimum amount of change.

I will endeavor now to outline the problems which must be considered if the hospital is to continue in its present condition of efficiency and the lines along which development naturally will proceed.

Additional accommodations.—In the first place, with the present condition of the hospital regarding population, and with the reasonable expectation of a continued 100 per annum increase, it is time to consider the question of providing additional buildings. In order to provide additional accommodations to the best advantage in a growing institution of this sort it would seem best to begin the construction of colonies for separate classes of patients. The first one that would naturally be considered at this time is an epileptic colony. There are at present in the hospital approximately 150 epileptics. Of this number, the white women are well housed in an appropriate building. The white male epileptics are provided for in wards set aside for that purpose, which, however, were not especially constructed for this class of patients. It would therefore be better in arranging for the growth of the institution to build an epileptic colony to accommodate about 120 patients, and so constructed that additional quarters could be added as this class of the population increases. Thus the quarters which are now used for epileptics, and which are not well adapted for such purposes, could be utilized for the general population.

The same method of treatment recommends itself in approaching the tuberculosis problem. While the tubercular patients throughout the hospital are at present well accommodated and quite efficiently segregated from the rest of the hospital population, still they are distributed pretty widely in several buildings, and it would be advantageous to accumulate them in a single colony, probably in a rather remote part of the hospital grounds. The quarters which are now occupied by this class of patients would then become available for general purposes. I believe too that in the not very distant future it may be necessary to provide additional accommodations for our criminal insane. The present building used for taking care of this class of cases, Howard Hall, is kept pretty well filled and is so constructed that the exercise ground inclosed within its walls is already inadequate for the number of patients that have to use it. Unfortunately it can not be enlarged, as it is inclosed within the four walls of the building. If the criminal population should materially

increase, conditions would become very undesirable in this building, and it would be much better to construct a special department for this class of cases which would lend itself to increase in size if such increase became necessary. It will thus be seen that in providing for the increased growth of the hospital we can, in accordance with the plan outlined above, at the same time improve the surroundings and the classification of the population.

As the hospital grows it will also become necessary to consider the question of housing, under proper conditions and supervision, the employees. At the present time there is a separate home for the female nurses, who are provided therein with pleasant and comfortable surroundings, and at the same time are subject to a reasonable amount of administrative supervision, while a far less responsible class of employees, for example, many of those employed in the laundry, kitchens, and dining rooms, is permitted practically entire freedom because of inadequate facilities for housing them. These conditions naturally result from time to time in complaints and complications which would largely be done away with if the class of employees in question could be cared for in the same way as our nurses. Such methods of dealing with the employees, too, makes for a better esprit de corps of the entire employee population. The home for male nurses, which is now practically completed, will shortly be occupied, and will not only make this class of employees much more comfortable but will enable the utilization of the rooms they now occupy for patients.

Additional land.—In regard to the general solutions offered above for the expansion of the hospital it becomes necessary again to refer, as I have in previous reports, to the question of the need for additional land. This need, perhaps, is best shown as a result of a crop survey recently made by the Agricultural Department. The principal idea of this crop survey was to get data which will enable us to utilize our land to better advantage in the raising of roughage for the cows. The hospital maintains a herd of approximately 200 cows from which it derives its supply of milk. Aside from the fact that milk can be procured in this way economically, the character of milk which the hospital requires can not be bought in the quantities needed for any price in this District. It therefore becomes essential for the hospital to maintain its own dairy herd, and of course it is economical to raise as far as possible the forage for the herd. Inasmuch as we were not able to raise sufficient feed we asked the assistance of the Agricultural Department. In summing up their report they make the following significant statement:

> It will be seen that a total of 442 acres is needed for crops. Counting 200 acres of tillable land at Godding Croft and 150 acres at the home place, there is still a deficiency of nearly 100 acres.

This report was made when there was in view only an increase of the forage for stock, without reference to the use of land for truck gardening or for other purposes. It will thus be seen that at the present time the hospital has not sufficient land on which to raise the necessary feed for its dairy herd.

As the hospital has been growing for the past fifty years, practically every addition in the way of building construction has been made upon land that was previously used for farming purposes, and it has now been many years since any additional land was purchased.

At the present time, therefore, we not only need more land for the immediate purposes set forth above, but no scheme to provide for future growth of the hospital can be considered until more land is purchased. If we are to have additional land at all, and it seems incredible that more land should not be provided, the time to provide it is now, before the laying out of additional buildings becomes necessary, so that when these building propositions come to be considered they may have the benefit of the better locations that additional land will largely afford. For example, the portion of the grounds now set aside for the female population is practically fully occupied. The natural direction for the expansion of this population is south. The hospital does not own any further land in this direction upon which buildings could be erected. It is therefore immediately desirable that this adjoining property should be purchased.

It is economically desirable if land is going to be purchased, and I think I have shown that it must be purchased if the hospital is to be efficiently maintained, that it should be purchased now. The acquiring of additional land has been recommended time after time, not only by myself, but by preceding superintendents, but up to the present nothing has been done. Things, however, have now reached such a pass that it would seem suicidal to put off action longer. In this connection it must be remembered that the price of land adjoining the institution is gradually but constantly advancing, and at a conservative estimate it has doubled since the need for additional land was first appreciated. These prices will continue to advance, for the land immediately adjoining the hospital is being rapidly settled and built upon. I am still of the opinion that the way this matter should be handled is in accordance with the recommendations which are set forth in my last annual report in the following words:

> Every effort on the part of the hospital to buy land has been futile, owing to the complications that have arisen. Prices have been asked for property which were prohibitive, and all efforts to buy have been blocked by competing owners. While all this has been going on, the price of land in the immediate neighborhood has been steadily increasing, so that land that could have been bought very cheaply only a few years ago could not be purchased now for five times the amount it was then offered for. The only way which I can see will relieve this situation is to introduce a bill providing for a detailed hearing on the subject before a Congressional committee. The hospital's needs will then be clearly demonstrated, and results could not then be influenced by the selfish interests of property owners. The committee that investigated the hospital at the last session of Congress recognized the needs of the institution in this respect and reported that "it would be advantageous to the hospital and beneficial to the patients if additional lands could be obtained."

Dairy herd, barns, etc.—In another way, but bearing indirectly upon the general subject of expansion, there is at this time being carried on a gradual change from the old worn-out herd of more or less profitless cows to a modern high-class herd which will be capable of giving all the milk needed. This will take some time to accomplish, and means the expenditure of some thousands of dollars, as it is proposed to raise a home herd, segregating each year the best heifer calves and rearing them instead of purchasing new stock. In connection with this project it is hoped that Congress may finally be induced to grant an appropriation for a new dairy barn to replace the present dilapidated and insanitary structure which we are compelled to use and which makes it difficult to obtain desirable results in the production of milk. The removal of the poultry yard from its present position fronting on Nichols avenue to Godding Croft, plans

for which are now in course of preparation, will leave a space sufficient to provide a site for a new cow barn.

Changes in electrical plant.—A part of this general scheme of expansion, and one which can not be disregarded, is the change from the direct to the alternating current for distributing light and power to the different portions of the institution. The desirability and necessity for these changes have been already outlined in this report in considering the subject of estimates, and are only referred to again because they form a part of the matter being considered under this general head.

Per capita cost.—The hospital has frequently been criticised for maintaining an unusually high per capita cost, namely $220 per annum. In connection with this per capita certain considerations are interesting and instructive.

The per capita cost of maintenance of $220 was first made in 1886, when the cost of the principal staple articles needed by the hospital was much lower than it is at present. For instance, fresh beef, which was in 1886, 0.0715 per pound; 1891, 0.0543 per pound; 1896, 0.0687 per pound; 1901, 0.0684 per pound; 1904, 0.071½ per pound; 1905, 0.0673 per pound; 1906, 0.0644 per pound; 1907, 0.0611 per pound; 1908, 0.0698 per pound, and is at this writing 0.0775 per pound. This being the largest single item we purchase it makes a good comparison of the increased cost of living and precludes any idea of reducing the per capita cost. In fact the annual report of the Department of Commerce and Labor on the cost of representative staple articles, which has just been issued, shows that the average for the year 1907 was 5.8 per cent higher than for 1906; 44.4 per cent higher than for 1897, and 29.5 per cent higher than the average for the ten years from 1890 to 1899.

By comparison during the past few years many institutions similar to this have increased their per capita cost, a few being included herewith. Comparing their cost at the time of the investigation of this hospital by the committee of Congress in 1906 with that stated in the last annual report shows the following results: Maryland State Hospital, $201.50 to $209.84; Middletown, N. Y., from $177.49 to $189.43; Northampton, Mass., from $176.81 to $196.41; St. Lawrence, N. Y., from $176 to $190.60; Matteawan, N. Y., from $181.05 to $194.59; Manhattan, N. Y., from $167.71 to $172.82; Connecticut Hospital for the Insane, from $174.20 to $186.15, etc.

It will thus be seen that while the per capita cost of the hospital has remained stationary during all of this period of time, the cost of the staple articles for which it has to pay in the way of supplies, and also in the way of labor, have gradually and progressively increased. Comparison of per capita costs is of course rather a dangerous way of reaching conclusions, as different institutions make up their per capitas by entirely different methods. From a careful study of this matter, however, I think I may safely say that the per capita of this hospital contains every item that should by any possibility be included in it, while the per capita of many institutions excludes very many items. Thus while the per capita of this hospital has been standing still, the per capita of other institutions has been gradually increasing and approaching it, while several institutions, particularly the smaller ones, have already exceeded it.

STATISTICAL TABLES.

Admissions and discharges.

REMAINING JUNE 30, 1907.

	Males.			Females.			Total.
	White.	Colored.	Total.	White.	Colored.	Total.	
Army	824	34	858	.....	.....	.....	858
Navy	177	11	188	.....	.....	.....	188
Public Health and Marine-Hospital Service	27	8	35	.....	.....	.....	35
Civil life	584	248	832	445	238	683	1,515
Total	1,612	301	1,913	445	238	683	2,596

ADMITTED DURING THE YEAR.

Army	169	12	181	.....	.....	.....	181
Navy	61	4	65	.....	.....	.....	65
Public Health and Marine-Hospital Service	4	2	6	.....	.....	.....	6
Civil life	147	73	220	107	64	171	391
Total	381	91	472	107	64	171	643

DISCHARGED DURING THE YEAR—RECOVERED.

Army	44	2	46	.....	.....	.....	46
Navy	31	1	32	.....	.....	.....	32
Public Health and Marine-Hospital Service	1	.....	1	.....	.....	.....	1
Civil life	25	13	38	20	18	38	76
Total	101	16	117	20	18	38	155

DISCHARGED DURING THE YEAR—IMPROVED.

Army	24	.....	24	.....	.....	.....	24
Navy	8	.....	8	.....	.....	.....	8
Public Health and Marine-Hospital Service	.....	.....	.....	.....	.....	.....	.....
Civil life	32	16	48	20	10	30	78
Total	64	16	80	20	10	30	110

DISCHARGED DURING THE YEAR—UNIMPROVED.

Army	3	.....	3	.....	.....	.....	3
Navy	1	.....	1	.....	.....	.....	1
Public Health and Marine-Hospital Service	.....	.....	.....	.....	.....	.....	.....
Civil life	21	3	24	4	1	5	29
Total	25	3	28	4	1	5	33

DISCHARGED DURING THE YEAR—NOT INSANE.

Army	2	1	3	.....	.....	.....	3
Navy	2	.....	2	.....	.....	.....	2
Civil life	.....	1	1	.....	1	1	2
Total	4	2	6	.....	1	1	7

Admissions and discharges—Continued.

DECEASED DURING THE YEAR.

	Males.			Females.			Total.
	White.	Colored.	Total.	White.	Colored.	Total.	
Army	70	4	74	.....	.....	.....	74
Navy	8	1	9	.....	.....	.....	9
Public Health and Marine-Hospital Service	1	1	2	.....	.....	.....	2
Civil life	54	17	71	27	18	45	116
Total	133	23	156	27	18	45	201

REMAINING JUNE 30, 1908.

Army	850	39	889	.....	.....	.....	889
Navy	188	13	201	.....	.....	.....	201
Public Health and Marine-Hospital Service	29	9	38	.....	.....	.....	38
Civil life	601	269	870	480	255	735	1,605
Total	1,668	330	1,998	480	255	735	2,733

SUMMARY.

Remaining June 30, 1907	1,612	301	1,913	445	238	683	2,596
Admitted during the year	381	91	472	107	64	171	643
Total number under treatment	1,993	392	2,385	552	302	854	3,239
Discharged:							
Died	133	23	156	27	18	45	201
Recovered	101	16	117	20	18	38	155
Improved	64	16	80	20	10	30	110
Unimproved	25	3	28	4	1	5	33
Not insane	4	2	6	.....	1	1	7
Total	327	60	387	71	48	119	506
Remaining June 30, 1908	1,668	330	1,998	480	255	735	2,733

Admissions and discharges, classified according to sex, for the year ended June 30, 1908, and since the opening of the hospital in 1855.

	Year ended June 30, 1907.			Since opening of hospital		
	Male.	Female.	Total.	Male.	Female.	Total.
Admitted	472	171	643	13,488	3,809	17,297
Discharged:						
Recovered	123	39	162	4,629	964	5,593
Improved	80	30	110	2,083	768	2,851
Unimproved	28	5	33	381	169	550
Died	156	45	201	4,397	1,173	5,570
Remaining	1,998	735	2,733	1,998	735	2,733
Total number of admissions	.....	.....	.....	13,488	3,809	17,297

Percentage of total admissions recovered, improved, etc.

	Male.	Female.	Total.
Recovered	34.32	25.31	32.34
Improved	15.44	20.17	16.49
Unimproved	2.82	4.43	3.17
Died	32.61	30.79	32.20
Remaining	14.81	19.30	15.80
Total	100.00	100.00	100.00

Monthly changes of population.

	Admitted.			Discharged.			Died.			Total discharged and died.
	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	
1907.										
July	53	17	70	37	9	46	9	8	17	63
August	29	14	43	16	10	26	6	2	8	34
September	24	15	39	9	9	18	9	4	13	31
October	58	6	64	22	8	30	31	3	34	64
November	42	14	56	24	4	28	8	3	11	39
December	32	11	43	20	8	28	14	6	20	48
1908.										
January	21	10	31	17	8	25	9	6	15	40
February	32	11	43	16	6	22	14	2	16	38
March	48	20	68	13	2	15	11	1	12	27
April	36	20	56	20	6	26	11	3	14	40
May	65	10	75	14	.....	14	19	3	22	36
June	32	23	55	23	4	27	15	4	19	46
Total	472	171	643	231	74	305	156	45	201	506

Admissions, discharges, and deaths, with the mean annual mortality and proportion of recoveries, per cent of the discharges, including deaths, for each year since the opening of the hospital.

Year.	Admitted.			Discharged.													Remaining June 30 in each year.			Daily average.			Percentage of recoveries on discharges.			Percentage of deaths on average numbers.			Percentage of deaths on total number.		
				Recovered.			Improved.			Unimproved.			Died.																		
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
1855	26	37	63	.....	3	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	26	34	60	19.35	20.65	40.00	.....	100.00	100.00	.....	.....	.....	.....	.....	.....	.....	.....
1855–56	36	11	47	3	2	5	.....	.....	.....	.....	1	1	5	3	8	54	39	93	41.20	37.98	70.18	37.50	33.33	35.71	12.13	7.09	10.10	8.06	6.66	7.48
1856–57	25	27	52	2	4	6	3	1	4	7	3	10	8	8	16	59	50	109	54.55	42.80	97.35	10.00	25.00	16.66	14.66	18.69	16.43	10.13	12.12	11.03
1857–58	29	14	43	13	5	18	1	1	2	2	.....	2	7	6	13	65	52	117	57.70	50.31	108.01	56.52	44.66	51.42	12.13	11.92	12.03	7.95	9.37	8.55
1858–59	47	18	65	16	5	21	1	4	5	5	3	8	6	4	10	84	54	138	72.93	56.24	129.17	57.13	31.25	47.73	8.22	7.11	7.74	5.36	5.71	5.49
1859–60	68	24	92	26	7	33	4	3	7	3	2	5	13	5	18	106	61	167	160.68	59.00	159.68	56.52	41.17	52.38	12.91	8.47	11.27	8.55	6.41	7.25
1860–61	64	31	95	42	11	53	5	2	7	2	.....	2	12	7	19	109	72	181	109.72	64.81	174.57	68.85	55.55	65.43	10.93	10.80	10.88	7.06	7.61	7.82
1861–62	174	12	186	96	8	104	14	1	15	.....	.....	.....	26	10	36	147	65	212	123.75	65.74	189.49	70.59	42.10	67.09	21.01	15.21	19.00	9.18	11.90	9.81
1862–63	330	25	355	197	6	203	17	1	18	3	3	6	57	4	61	203	76	279	168.41	72.31	240.72	71.89	42.85	70.45	33.84	5.53	25.34	11.95	4.44	10.76
1863–64	484	25	509	282	6	288	69	1	70	5	.....	5	67	8	75	364	86	350	205.73	77.66	283.39	66.66	40.00	65.75	42.56	10.30	26.40	11.75	7.92	9.51
1864–65	478	36	514	315	9	324	110	12	122	11	.....	11	139	8	147	167	93	200	277.42	33.81	361.23	54.78	31.03	53.64	50.10	9.54	40.69	18.73	6.55	17.01
1865–66	194	28	222	104	5	109	20	7	27	10	1	11	41	12	53	186	96	282	190.92	90.70	281.62	59.42	20.00	54.50	21.47	13.23	18.82	11.35	9.91	10.99
1866–67	88	21	109	45	7	52	11	3	14	11	1	12	19	14	33	188	92	280	189.06	89.46	279.12	52.32	28.00	46.85	10.02	15.65	11.82	6.93	11.96	8.44
1867–68	120	33	153	49	15	64	6	2	8	5	1	6	22	5	27	226	102	328	221.17	96.44	317.61	59.75	65.22	60.95	9.95	5.18	9.50	7.14	4.00	6.23
1868–69	133	35	168	59	11	70	9	6	15	8	2	10	24	9	33	259	109	368	244.55	108.03	352.58	59.00	39.28	54.69	9.81	8.33	9.35	6.70	6.57	6.65
1869–70	146	36	182	32	8	40	16	8	24	11	3	14	15	3	18	331	123	454	294.69	108.08	402.77	43.24	36.37	41.67	5.09	2.77	4.36	3.71	2.05	3.27
1870–71	161	34	195	50	12	62	21	7	28	4	3	7	33	11	44	384	124	508	354.34	121.66	476.00	46.30	36.36	43.97	9.31	9.04	9.24	6.70	7.00	6.78
1871–72	142	44	186	43	8	51	16	13	29	8	1	9	37	7	44	422	139	561	407.21	131.57	538.78	41.34	27.59	38.34	9.09	5.32	8.16	7.04	4.17	6.34
1872–73	153	51	204	49	15	64	23	5	28	3	5	8	32	13	45	468	152	626	431.03	144.11	575.14	45.40	39.47	44.13	7.42	9.02	7.82	5.56	6.84	5.88
1873–74	192	38	230	67	12	79	22	8	30	6	3	9	39	11	50	526	156	682	492.44	151.36	643.80	50.00	35.29	47.02	7.92	7.27	7.76	5.91	5.79	5.88
1874–75	179	51	230	66	9	75	28	22	50	8	3	11	51	7	58	552	166	718	536.46	164.17	700.63	42.13	21.95	38.66	9.50	4.26	8.27	7.23	3.38	6.36
1875–76	166	47	213	67	17	84	26	10	36	1	.....	1	48	18	66	570	168	744	564.78	165.59	730.37	47.18	37.78	45.45	8.49	10.87	9.04	6.68	8.45	7.09
1876–77	147	51	198	66	17	83	27	13	40	2	.....	2	45	7	52	583	182	765	587.41	176.30	763.71	47.80	45.94	46.89	7.66	3.96	6.80	6.22	3.19	5.52
1877–78	138	44	182	49	11	60	32	9	41	3	4	7	37	9	46	600	193	793	596.82	184.37	781.19	40.49	33.33	38.96	6.19	4.88	5.88	5.13	5.98	4.35
1878–79	169	53	222	68	24	92	30	7	37	3	1	4	51	12	63	617	202	819	619.10	196.70	815.80	44.73	54.54	46.93	8.23	6.10	7.72	6.63	4.87	6.20
1879–80	181	44	225	38	14	52	23	10	33	.....	3	3	46	13	59	691	206	897	655.34	196.63	851.97	35.51	35.00	35.37	7.01	6.61	6.92	5.76	5.28	5.65
1880–81	161	62	223	62	10	72	27	9	36	.....	6	6	63	18	81	700	225	925	685.37	111.38	896.75	40.78	23.25	36.92	9.19	8.51	9.03	7.39	6.71	7.23
1881–82	178	69	247	62	21	83	31	8	39	2	5	7	74	27	101	709	233	942	697.10	232.88	929.98	36.09	34.43	36.08	10.61	11.59	10.86	8.44	9.18	8.61
1882–83	201	64	265	76	19	95	33	16	49	.....	6	6	46	17	63	755	239	994	729.89	235.27	965.16	49.05	31.03	44.13	6.30	7.22	6.52	5.05	5.72	5.22
1883–84	286	64	347	68	13	81	35	8	43	3	1	4	51	16	67	884	262	1,146	797.21	243.27	1,040.48	42.03	34.21	40.51	6.39	6.57	6.44	4.90	5.33	4.99
1884–85	229	91	320	65	24	89	37	12	49	1	1	2	84	21	105	926	295	1,221	902.41	270.89	1,173.34	34.76	41.37	36.32	9.31	7.75	8.94	7.55	5.95	7.19
1885–86	234	69	303	55	22	77	58	15	73	2	3	5	79	23	102	966	301	1,267	936.39	283.23	1,219.62	28.35	34.92	29.96	8.54	8.12	8.36	6.81	6.32	6.69
1886–87	206	62	268	57	15	72	49	17	66	2	1	3	73	19	92	991	311	1,302	956.07	297.36	1,253.43	31.49	28.48	30.90	7.63	6.38	7.34	6.22	5.23	5.99
1887–88	247	71	318	59	10	69	52	14	66	3	1	4	95	25	120	1,029	332	1,361	1,009.55	315.55	1,325.08	28.23	20.00	26.64	9.41	7.92	9.06	7.67	5.64	7.41
1888–89	213	67	380	50	20	70	27	27	54	5	2	6	86	28	114	1,075	322	1,397	1,049.99	323.83	1,373.82	29.94	25.97	28.69	8.19	8.65	8.30	6.92	7.02	6.94
1889–90	274	71	345	39	6	45	43	6	49	.....	3	3	112	28	144	1,115	350	1,505	1,108.57	326.53	1,435.10	20.10	13.95	18.12	10.13	9.59	9.76	8.30	7.48	8.04
1890–91	271	81	352	36	30	66	38	15	53	1	1	2	98	30	128	1,253	355	1,608	1,160.62	344.44	1,505.06	20.81	34.47	26.51	8.44	8.71	8.51	6.87	6.96	6.89
1891–92	233	70	303	56	12	68	69	13	82	8	3	11	121	32	153	1,232	365	1,597	1,226.64	348.65	1,575.29	22.05	20.00	21.66	9.86	9.18	9.71	8.14	7.53	8.01
1892–93	261	84	345	57	10	67	46	23	69	4	1	5	140	41	181	1,246	374	1,620	1,255.56	357.02	1,582.58	23.08	13.33	20.81	11.41	11.48	11.44	9.38	9.13	9.32

1893–94	273	88	361	49	13	62	49	16	65	6	..	6	138	29	167	1,277	404	1,681	1,248.16	369.91	1,618.07	20.24	22.41	20.66	11.31	7.84	10.32	9.08	6.27	8.42
1894–95	293	78	371	68	30	98	40	32	72	1	..	1	143	36	179	1,318	384	1,702	,280.91	386.16	1,667.07	26.98	30.61	28.00	11.16	9.32	10.73	9.10	7.46	8.72
1895–96	278	92	370	74	15	89	39	14	53	7	1	8	146	41	187	1,330	405	1,735	1,290.08	379.25	1,669.33	27.81	21.12	26.40	11.31	10.81	11.20	9.14	8.61	9.02
1896–97	288	88	377	67	17	84	50	44	94	5	..	5	130	32	162	1,367	400	1,767	1,326.08	383.82	1,709.90	26.58	18.27	24.34	9.80	8.33	9.47	8.02	6.49	7.67
1897–98	347	90	437	84	12	96	30	19	49	8	1	9	167	30	197	1,425	428	1,853	1,388.25	409.75	1,798.00	29.06	19.35	27.35	12.03	7.32	10.96	9.74	6.12	8.94
1898–99	498	105	603	173	16	189	59	29	88	38	10	48	158	35	193	1,495	443	1,938	1,438.33	433.51	1,871.84	40.42	17.77	36.48	10.98	8.07	10.31	8.21	6.56	7.85
1899–1900	434	117	551	118	33	151	52	13	65	8	5	13	152	32	184	1,599	477	2,076	1,504.00	444.54	1,948.54	35.75	39.75	36.56	10.10	7.19	9.44	7.87	5.71	7.39
1900–1901	519	136	655	202	33	235	52	25	77	11	6	17	193	33	226	1,660	516	2,176	1,583.33	483.33	2,066.66	44.10	34.02	42.34	12.19	6.83	10.93	9.11	5.38	8.27
1901–2	532	154	686	209	39	248	78	20	98	9	11	20	137	40	177	1,759	557	2,316	1,675.85	518.16	2,194.01	48.26	34.51	45.42	8.17	7.70	8.06	6.24	5.97	6.18
1902–3	554	180	734	211	50	261	106	25	131	19	6	25	189	69	258	1,782	587	2,369	1,737.58	553.58	2,291.16	39.73	33.33	38.32	10.88	12.47	11.26	8.17	9.36	8.45
1903–4	584	182	766	194	42	236	95	35	130	21	13	34	189	54	245	1,867	625	2,492	1,783.08	577.00	2,360.08	38.87	29.16	36.70	10.60	8.66	10.29	7.98	6.50	7.75
1904–5	493	174	667	151	53	204	101	42	143	12	9	21	181	55	236	1,912	639	2,551	1,848.50	598.00	2,446.50	33.70	33.12	33.55	9.79	9.19	9.64	7.66	6.88	7.47
1905–6	421	180	601	173	60	233	94	33	127	29	13	42	150	52	202	1,887	661	2,548	1,887.50	654.50	2,542.00	38.34	37.34	38.07	7.94	7.95	7.94	6.42	6.34	6.40
1906–7	437	182	619	136	45	181	82	52	134	28	12	40	165	51	216	1,913	683	2,596	1,898.10	671.83	2,569.93	32.60	27.50	31.17	8.69	7.60	8.40	7.09	6.05	6.82
1907–8	472	171	643	123	39	162	80	30	110	28	5	33	156	45	201	1,998	735	2,733	1,965.70	699.00	2,664.70	31.52	32.77	32.40	7.93	6.43	7.54	6.54	5.27	6.20

Seven "not insane" 6 males and 1 female, are included with recovered in 1907–8.

Nativity of patients admitted during the year and since the opening of the hospital in 1855.

	During year.	Since 1855.
Native born:		
Alabama	2	55
Arkansas	3	33
Arizona	.....	1
California	3	28
Colorado	2	11
Connecticut	.....	118
Dakota	.....	10
Delaware	.....	35
District of Columbia	84	2,221
Florida	1	21
Georgia	3	103
Illinois	10	237
Indiana	12	218
Indian Territory	2	16
Iowa	3	50
Kansas	3	44
Kentucky	7	228
Louisiana	4	51
Maine	2	137
Maryland	29	1,313
Massachusetts	14	539
Michigan	8	113
Minnesota	.....	25
Mississippi	3	58
Missouri	6	126
Montana	.....	1
Nebraska	2	8
New Hampshire	3	89
New Jersey	7	163
New Mexico	.....	4
New York	28	1,113
North Carolina	10	152
Ohio	22	583
Oregon	.....	5
Pennsylvania	32	898
Rhode Island	4	52
South Carolina	5	58
Tennessee	13	137
Texas	5	57
Utah	1	2
Vermont	1	71
Virginia	57	1,742
West Virginia	3	73
Wisconsin	3	74
Oklahoma	.....	1
United States	112	493
Total	509	11,567
Foreign born:		
Alsace	.....	1
Armenia	.....	2
Austria	5	70
Bahama Islands	.....	1
Bavaria	.....	17
Belgium	.....	8
Bermuda	.....	1
Bohemia	.....	7
Brazil	.....	1
British Columbia	.....	1
British East Indies	.....	6
British possessions	.....	1
British West Indies	.....	12
Buenos Aires	.....	3
Canada	5	145
Cape Verde Islands	1	1
Chile	1	1
Coast of Africa	.....	2
Costa Rica	.....	1
Cuba	1	7
Cyprus	.....	1
Denmark	.....	46
England	17	377
Finland	.....	8
France	3	99
Germany	25	1,585
Greece	.....	7
Holland	.....	17
Philippine Islands	.....	1
Hungary	.....	16
Iceland	.....	1
Ireland	22	2,253
Italy	3	72
Japan	.....	7
Korea	.....	1
Malta	.....	3
Mexico	.....	14
New Brunswick	.....	4
Newfoundland	1	3
New Grenada	.....	1
Norway	2	58
Nova Scotia	1	23
Panama	.....	1
Poland	1	29
Portugal	.....	8
Prince Edward Island	.....	3
Prussia	2	33
Roumania	.....	3
Russia	5	69
Sandwich Islands	.....	3
Saxony	.....	6
Scotland	4	103
Sicily	.....	3
Spain	.....	8
Sweden	4	102
Switzerland	3	70
Turkey	.....	6
Wales	.....	22
West Indies	2	4
Unknown	26	372
Total	134	5,730
Grand total	643	17,297

Age of patients admitted during the year ended June 30, 1908.

	Male.	Female.	Total.
10 to 15 years	1	1	2
15 to 20 years	19	9	28
20 to 25 years	78	12	90
25 to 30 years	61	20	81
30 to 35 years	44	26	70
35 to 40 years	53	26	79
40 to 45 years	22	21	43
45 to 50 years	15	14	29
50 to 60 years	36	13	49
60 to 70 years	82	12	94
70 to 80 years	36	11	47
80 to 90 years	11	2	13
Unascertained	14	4	18
Total	472	171	643

Civil condition of patients admitted during the year ended June 30, 1908.

	Male.	Female.	Total.
Single	259	50	309
Married	117	74	191
Widowed	66	41	107
Divorced	1	.....	1
Unascertained	29	6	35
Total	472	171	643

Duration of mental disease of patients who died during the year ended June 30, 1908.

	Male.	Female.	Total.		Male.	Female.	Total.
Under one month	3	1	4	Four to six years	26	6	32
One to two months	3	.....	3	Six to ten years	11	4	15
Two to four months	3	2	5	Ten to fifteen years	5	3	8
Four to six months	7	2	9	Fifteen to twenty years	6	2	8
Six to nine months	6	1	7	Twenty to twenty-five years	4	5	9
Nine months to one year	10	2	12	Over twenty-five years	9	1	10
One year to eighteen months	9	4	13	Unascertained	.....	1	1
Eighteen months to two years	11	5	16				
Two to three years	21	2	23	Total	156	45	201
Three to four years	22	4	26				

Ages of patients who died during the year ended June 30, 1908.

	Male.	Female.	Total.		Male.	Female.	Total.
15 to 20 years	2	1	3	50 to 60 years	11	4	15
20 to 25 years	3	.....	3	60 to 70 years	40	6	46
25 to 30 years	3	5	8	70 to 80 years	36	14	50
30 to 35 years	10	2	12	80 to 90 years	19	3	22
35 to 40 years	11	2	13	Over 90 years	1	.....	1
40 to 45 years	9	4	13				
45 to 50 years	11	4	15	Total	156	45	201

Ages of patients discharged recovered during the year ended June 30, 1908.

	Male.	Female.	Total.		Male.	Female.	Total.
10 to 20 years	5	1	6	50 to 60 years	5	2	7
20 to 30 years	54	11	65	60 to 70 years	7	3	10
30 to 40 years	35	18	53				
40 to 50 years	11	3	14	Total	117	38	155

Physical diseases occurring during the year.

Disease.	Male.				Female.				Total.
	White.		Colored.		White.		Colored.		
	Patient.	Employee.	Patient.	Employee.	Patient.	Employee.	Patient.	Employee.	
MEDICAL.									
Acne vulgaris	3								3
Amyotrophic lateral sclerosis							1		1
Alopecia areata	1								1
Anæmia, secondary	2								2
Angina pectoris	2								2
Aneurism of aorta	2				1				3

Physical diseases occurring during the year—Continued.

Disease.	Male.				Female.				Total.
	White.		Colored.		White.		Colored.		
	Patient.	Employee.	Patient.	Employee.	Patient.	Employee.	Patient.	Employee.	
MEDICAL—continued.									
Ascariasis	1								1
Addison's disease	1								1
Asphyxia during epileptic convulsion			1		1				2
Asthma, bronchial	11	1	1		2		1		16
Asthma, cardiac					1		1		2
Bronchitis	53	3	7		5		3	2	73
Cardiac dilatation	1				1		1		3
Cardiac thrombosis					2		1		3
Cardiac valvular disease	22	3	6		8	3	8		50
Carcinoma of liver	1								1
Carcinoma of stomach	2								2
Cerebral congestion	1		1						2
Cerebral hemorrhage	17		1				1		19
Cerebral thrombosis	2				3		1		6
Cholæmia	1								1
Cholecystitis	3								3
Conjunctivitis	5		1		10		2		18
Cystitis	35	2	15		4		4		60
Dermatitis venenata	11						1		12
Diabetes mellitus	1						1		2
Eczema	4		2						6
Empyema	1								1
Gastritis, acute	1						1		2
Gastritis, chronic	2						1		3
Goitre, exophthalmic					1		1		2
Heat prostration	2								2
Herpes zoster	2	1							3
Hysteria					3		2		5
Influenza	128	48	24	2	25	45	25	2	299
Keratitis	2								2
Malaria	12	3	5		1				21
Measles	2	5				2			9
Measles, German						4			4
Mumps		1							1
Myocarditis	2		1				1		4
Nephritis	68	1	12	1	6		6		93
Neuralgia	3		1		1		1		6
Neuritis, multiple					3		1		4
Neuro-retinitis	2								2
Œdema of glottis	1								1
Pachymeningitis	2								2
Pancreatitis, hemorrhagic	1								1
Pediculosis capitus							1		1
Pediculosis pubis	1	1	6						8
Pericarditis	1								1
Pharyngitis	6		2		1	2	1	1	13
Pleurisy	3				2		2		7
Pneumonia, broncho	3				3				6
Pneumonia, hypostatic	16		4		1				21
Pneumonia, lobar	4								4
Pulmonary gangrene	2								2
Pulmonary thrombosis	1								1
Pyelitis	1								1
Pyelonephritis	4				1				5
Renal colic	1	1							2
Rheumatism, articular	9	1	1		4	2	1		18
Scabies		3							3
Status epilepticus	5		1		1				7
Syphilis	4						2		6
Tinea circinata	10	2			1		1	1	15
Tinea cruris	11								11
Thrombosis of inferior vena cava							1		1
Tonsilitis	14	24	3		5	11	4		61
Turberculosis	5		2		2		2		11
Typhoid fever		1							1
Uræmia	2								2
Urticaria					1	1			2
Total	516	101	97	3	100	70	80	6	973

Physical diseases occurring during the year—Continued.

Disease.	Male.				Female.				Total.
	White.		Colored.		White.		Colored.		
	Patient.	Employee.	Patient.	Employee.	Patient.	Employee.	Patient.	Employee.	
SURGICAL.									
Abscess, alveola	6				1	1	2		10
Abscess of cervical gland	2				1		1		4
Abscess, ischiorectal	1								1
Abscess, mastoid	1								1
Abscess, peritonsillar						1		1	2
Adenitis, axillary	1								1
Adenitis, cervical	1								1
Adenitis, inguinal	6		2						8
Appendicitis	2				1	1			4
Burn of buttocks							1		1
Burn of hand and arm			1			1	1		3
Burn of thigh	1								1
Bursitis	2								2
Carbunculosis	3								3
Cellulitis of hand	2								2
Cyst of vulvo-vaginal gland							1		1
Dislocation of femur	1								1
Dislocation of phalanx of finger	2								2
Dislocation of humerus	2				2				4
Endometritis						3	3		6
Epididymitis	2								2
Epithelioma of face	1	1							2
Epithelioma of nose	1								1
Erysipelas	5				5		2		12
Fibromyoma of uterus					2		2		4
Fistula in ano	4	1			1				6
Fracture of clavicle	2								2
Fracture of humerus					2				2
Fracture of inferior maxilla	1								1
Fracture of metacarpal bone	1		1						2
Fracture of neck of femur	3								3
Fracture of os calcis					1				1
Fracture of phalanx of fingers	1								1
Fracture of radius	6	1			1		1		9
Fracture of radius and ulna					1				1
Fracture of ribs	1						1		2
Fracture of skull			1						1
Fracture of tibia and fibula	1								1
Furunculosis	5	1	1		1	1	1		10
Gangrene of foot	1								1
Gangrene of toe	1								1
Gonorrhœa	3		1						4
Hemorrhoids, internal	2				1		1		4
Hemorrhoids, external	15	1	4		7		3		30
Hernia, inguinal	6	1	1		1		1		10
Hydrocele	2								2
Laceration of scrotum	1								1
Lipoma of abdominal wall							1		1
Lipoma of thigh			1						1
Mastoiditis	1	1							2
Onychia	5				2		1		8
Orchitis	3		1						4
Osteomyelitis	1								1
Otitis media	1								1
Peritonitis	2		1		1				4
Phlegmonous inflammation of leg	1		1						2
Pyosalpinx								1	1
Rectal prolapse	2				1				3
Sprain of ankle	3				2		1		6
Sprain of elbow	1								1
Sprain of knee	2		1	1	1		1		6
Sprain of wrist					1				1
Stricture of urethra	3								3
Tuberculosis of rib with abscess					1				1
Varicose ulcers	5				1		1		7
Total	128	7	17	1	38	8	26	2	227

Forms of mental disease of patients admitted during the year ended June 30, 1908.

	Male.	Female.	Total.
Infection—Exhaustion psychoses:			
Collapse delirium		1	1
Febrile delirium		2	2
Post-febrile psychosis	4	3	7
Toxic psychoses:			
Endogenous—			
Uræmia	1		1
Exogenous—			
Alcoholism (other than Korsakow's psychosis)	44	4	48
Morphinism	1		1
Mixed	2	4	6
Paranoia and paranoid states not otherwise classified	29	8	37
Manic depressive psychosis	45	38	83
Dementia præcox	116	54	170
Paresis	31	5	36
Psychosis associated with other diseases:			
Psycho-neuroses—			
Epilepsy	29	5	34
Hysteria	1	3	4
Psychasthenia	2		2
Other nervous diseases—			
Amyotrophic lateral sclerosis		1	1
Chorea	1		1
Exopthalmic goitre		1	1
Polyneuritis (including Korsakow's psychosis)		2	2
Organic disease and injury of the brain—			
Arterio-sclerosis	21	3	24
Syphilis	4	3	7
Traumatism	1		1
Diseases other than nervous—			
Myxœdema		1	1
Psychosis associated with visceral disease		2	2
Involutional melancholia		4	4
Senile psychosis	106	22	128
Constitutional inferiority	2		2
Imbecility	22	5	27
Not insane	10		10
Total	472	171	643

Causes of death during the year ended June 30, 1908.

Disease.	Male.	Female.	Total.
Constitutional diseases:			
Senility	4	1	5
Diseases of circulatory system:			
Aneurism of aorta	2	1	3
Cardiac valvular disease	24	7	31
Cerebral arterio-sclerosis	4	5	9
Interstitial myocarditis	6	1	7
Diseases of digestive system:			
Appendicitis with peritonitis	1	1	2
Calculous cholecystitis	3	.....	3
Cirrhosis of liver	.....	1	1
Colitis	3	2	5
Diarrhea	.....	2	2
Gastritis, acute	1	.....	1
Pancreatitis, hemorrhagic	1	.....	1
Peritonitis	.....	1	1
Diseases of genito-urinary system:			
Cystitis	2	.....	2
Cystitis with pyelonephritis	7	1	8
Nephritis, interstitial	7	2	9
Nephritis, suppurative	.....	1	1
Diseases of glandular system:			
Addison's disease	1	.....	1
Goiter	1	.....	1
Splenic anæmia	1	.....	1
Diseases of nervous system:			
Bulbar paralysis	1	.....	1
Cerebral arterio-sclerosis with softenings	3	.....	3
Cerebral concussion with fracture of skull	1	.....	1
Cerebral congestion with œdema	2	.....	2
Cerebral hemorrhage	8	2	10
Cerebral thrombosis	.....	1	1
Cerebral softening, acute white	3	2	5
Cerebral softenings, syphilitic	1	.....	1
Decubitis, neuropathic	1	.....	1
Epileptic convulsions	2	1	3
Hemorrhage of spinal membrane	.....	1	1
Lepto-meningitis	1	.....	1
Maniacal excitement, exhaustion from	1	1	2
Pachymeningitis, gummatous	1	.....	1
Paresis	22	1	23
Paresis with pulmonary gangrene	2	1	3
Paresis with pyelonephritis	1	.....	1
Status epilepticus	3	.....	3
Diseases of osseous system:			
Fracture of femur	1	.....	1
Osteomyelitis	1	.....	1
Diseases of respiratory system:			
Asphyxia from œdema of glottis	1	.....	1
Bronchitis, acute	1	.....	1
Bronchitis, chronic	1	.....	1
Broncho-pneumonia	4	1	5
Pneumonia, hypostatic	3	.....	3
Pulmonary congestion	3	.....	3
Pulmonary gangrene	2	.....	2
Infectious diseases:			
Epidemic influenza	5	.....	5
Tuberculosis, pulmonary	8	6	14
Tuberculosis, peritoneal	1	.....	1
Local diseases:			
Burn of buttocks	.....	1	1
Gangrene of foot	1	.....	1
New growths:			
Carcinoma of cervex-uteri	.....	1	1
Carcinoma of liver	1	.....	1
Carcinoma of stomach	2	.....	2
Total	156	45	201

Summary of receipts and expenditures for the fiscal year ended June 30, 1907.

RECEIPTS.

On hand, as stated in last annual report:		
Support		$1,414.15
Repairs		3,167.51
Miscellaneous receipts from patients		2,015.08
Board of Marine-Hospital Service patients		2,020.21
Disallowances		30.77
		8,647.72

EXPENDITURES.

House furnishings, fuel, lights, etc.:		
Furniture, fixtures, etc	$3.90	
Laundry supplies	63.60	
		67.50
Dry goods, clothing, books, etc.:		
Shoes and slippers	1.50	
Books and periodicals	188.63	
Postage, stationery, etc	.69	
		190.82
Medical supplies, etc.:		
Dental supplies, etc		2.00
Repairs and improvements:		
Lumber, etc	575.00	
Hardware, etc	1,643.54	
Engineers' and plumbers' supplies	1,134.09	
Electrical supplies	2,677.20	
		6,029.83
Salaries and wages:		
Mechanics, etc	25.00	
Ward service	17.97	
Laundry	2.40	
		45.37
Balance in United States Treasury:		
Support	193.98	
Repairs	2,118.22	
		2,312.20
Total		8,647.72

Summary of receipts and expenditures for the fiscal year ended June 30, 1908.

RECEIPTS.

Appropriated for—	
Support	$305,800.00
District of Columbia patients	289,665.13
Marine-Hospital Service patients	8,277.50
Repairs	35,000.00
Buildings and grounds	85,000.00
Board of patients	21,247.53
Sale of stock	5,744.18
Disallowances	161.45
Revision of auditor's settlement	21.69
On hand, buildings and grounds	80,578.21
On hand, extension of hospital	4,694.72
	836,190.41

EXPENDITURES.

Subsistence:		
Flour, meal, crackers, etc	$18,798.35	
Butterine, milk, cheese, and eggs	22,606.19	
Fresh meats	33,497.46	
Salt and smoked meats	25,341.87	
Fish and poultry	13,394.83	
Tea and coffee	8,668.62	
Sugar, molasses, etc	12,940.69	
Lard	4,161.24	
Fruits and vegetables	13,589.40	
Other groceries	16,669.11	
		$169,667.76
House furnishings, fuel, lights, etc.:		
Furniture, fixtures, etc	11,391.04	
Bedding	5,792.89	
Table and towel linen	1,079.93	
Utensils, crockery, etc	2,175.18	
Kitchen fittings, etc	258.34	
Laundry supplies	6,628.25	
Carpets, etc	738.10	
Coal—		
Hard	4,724.62	
Soft	84,773.70	
Charcoal	12.00	
		117,574.05
Dry goods, clothing, books, stationery, etc.:		
Boots, shoes, and slippers	5,334.47	
New clothing	4,181.81	
Clothing material	9,163.15	
Hats	481.31	
Notions	641.13	
Books and periodicals	744.56	
Stationery, postage, etc	2,597.23	
Freight and hauling	231.53	
Incidental work, etc	42.91	
Photographic supplies	193.65	
		23,611.75
Medical supplies, expended for amusements of patients, etc.:		
Drugs, medicines, etc	6,033.42	
Alcoholic stimulants	322.17	
Instruments, etc	376.88	
Returning eloped patients	202.50	
Amusement of patients	2,018.77	
Sending to their homes	75.70	
Pathological supplies	681.68	
Dental supplies	53.23	
Musical instruments, etc	26.50	
		9,790.85
Farm, garden, and stable:		
Feed	10,379.85	
Implements, horseshoes, etc	448.16	
Plants and seeds	1,859.89	
Manures, etc	91.00	
Live stock	3,003.50	
Harness and repairs	120.79	
Vehicles and repairs	704.19	
Hay and straw	10,149.57	
Incidental expenses	5.60	
		26,762.55

Repairs and improvements:		
Lumber, doors, etc	$7,492.34	
Hardware, etc	11,902.71	
Engineers' and plumbers' supplies	12,430.42	
Paints, oils, glass, etc	4,602.34	
Roofing	181.29	
Iron work, etc	7,766.20	
Sundry small repairs	48.50	
Masons' supplies	656.99	
Electrical supplies	1,658.88	
Building	5,934.43	
		$52,674.10
Salaries and wages:		
Superintendent, physicians, and general office	51,023.76	
Ward service	103,619.77	
Inside domestic department	34,521.59	
Engineers' department	33,158.90	
Farm and garden, drivers, etc	35,363.37	
Mechanics and helpers	28,529.92	
Laundry	11,572.14	
Sunday service	500.00	
		298,289.45
On hand:		
Support	1,738.58	
Repairs	5,204.38	
Buildings and grounds	125,942.53	
Extension of hospital	4,694.72	
Payment to treasurer to take up protested check	72.29	
Lapsed into surplus fund, buildings and grounds	167.40	
		137,819.90
Total		836,190.41

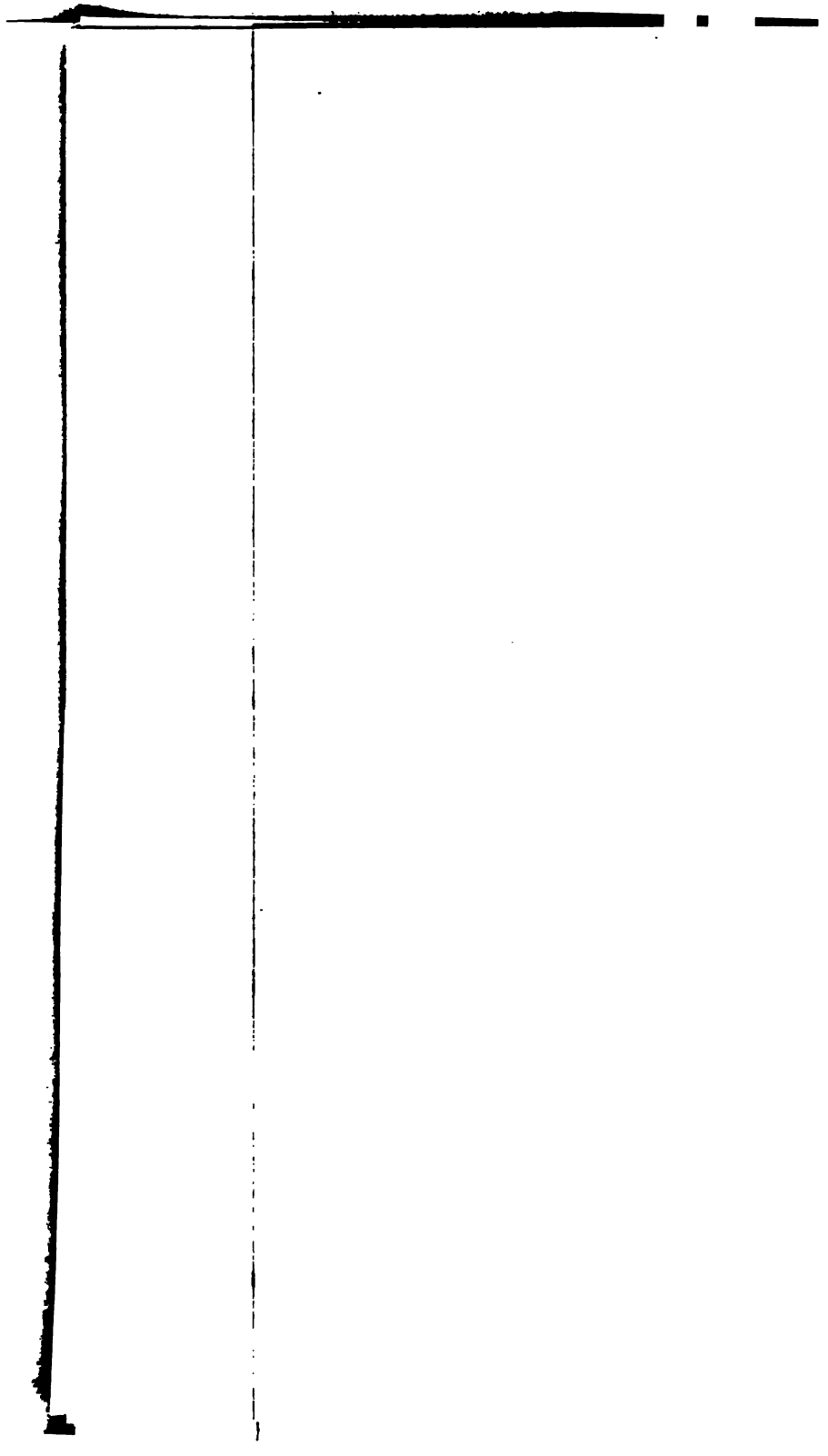
The following summaries of population and expenditures have been prepared in accordance with a resolution of the National Conference of Charities and Corrections adopted May 15, 1906:

Summary of population.

	Male.	Female.	Total.
Number of patients at beginning of fiscal year	1,913	683	2,596
Number of patients received during the year	472	171	643
Number of patients discharged or died during the year	387	119	506
Number of patients at end of fiscal year	1,998	735	2,733
Daily average number of patients	1,965	699	2,664
Average number of officers and employees during the year	455	260	715

Summary of expenditures.

Current expenditures:	
Salaries and wages	$277,611.15
Clothing	20,650.61
Subsistence	291,263.89
Ordinary repairs	34,875.27
Office, domestic, and outdoor expenses	37,554.10
Extraordinary expenses:	
New buildings, land, etc	.....
Permanent improvements to existing buildings	28,366.84
Total	690,321.86



FIFTY-FIRST ANNUAL REPORT OF THE COLUMBIA INSTITUTION FOR THE DEAF AND DUMB.

OFFICERS OF THE INSTITUTION.

Patron.—Theodore Roosevelt, President of the United States.
President.—Edward Miner Gallaudet, Ph. D., LL. D.
Secretary.—Charles S. Bradley, esq.
Treasurer.—William W. W. Parker, esq.
Directors.—Hon. George C. Perkins, Senator from California; Hon. Charles N. Fowler, Member of Congress from New Jersey; Hon. Thetus W. Sims, Member of Congress from Tennessee, representing the Congress of the United States; Hon. John W. Foster, Hon. David J. Brewer, Hon. Francis M. Cockrell, R. Ross Perry, esq., Theodore W. Noyes, esq., of the District of Columbia; John B. Wight, esq., of New York.

FACULTY OF GALLAUDET COLLEGE.

President, and professor of moral and political science.—Edward Miner Gallaudet, Ph. D., LL. D.
Vice-president, and professor of languages.—Edward A. Fay, M. A., Ph. D.
Emeritus professor of natural science, and lecturer on pedagogy.—Rev. John W. Chickering, M. A.
Professor of history and English.—J. Burton Hotchkiss, M. A., Litt. D.
Professor of mathematics and Latin.—Amos G. Draper, M. A., Litt. D.
Professor of natural science.—Charles R. Ely, M. A., Ph. D.
Professor of applied mathematics and pedagogy.—Percival Hall, M. A.
Assistant professor of natural science.—Herbert E. Day, M. A.
Assistant professor of Latin.—Allan B. Fay, M. A.
Assistant professor of history and English, and librarian.—Albert C. Gaw, M. A., D. C. L.
Instructor in English and Latin.—Elizabeth Peet.
Instructor in engineering.—Isaac Allison, E. E.
Instructor in gymnastics.—Albert F. Adams, M. A.
Instructor in drawing.—Arthur D. Bryant, B. Ph.

DEPARTMENT OF ARTICULATION.

Professor in charge.—Percival Hall, M. A.
Instructors.—Annie E. Jameson; Albert C. Gaw, M. A., D. C. L.
Normal fellows.—Ernestine Faye Ball, M. A., Ohio State University; Orville Clark Cone, B. A., Colgate University, New York; Edwin Louis La Crosse, B. Ph., Union College, New York; Frank Horace Reiter, B. A., Muhlenberg College, Pennsylvania.
Normal student.—Florence Josephine Ensworth, Bainbridge High School, New York.

FACULTY OF THE KENDALL SCHOOL.

President.—Edward Miner Gallaudet, Ph. D., LL. D.
Instructors.—James Denison, M. A., principal; Melville Ballard, M. S.; Theodore A. Kiesel, B. Ph.; Sarah H. Porter, M. A.; Clara Taliaferro; Helen Fay.
Instructors in articulation.—Anna S. Gaw; Elizabeth Peet.

DOMESTIC DEPARTMENT.

Supervisor and disbursing agent.—Wallace G. Fowler.
Attending physician.—D. Kerfoot Shute, M. D.
Matron.—Myrtle M. Ellis.
Associate matron.—Mary E. Schenck.
Boys' supervisor.—Frederick W. Schoneman, B. Ph.
Girls' supervisor.—Mattie Maud Holland.
Master of shop.—Isaac Allison, E. E.
Farmer and head gardener.—Edward Mangum.

FIFTY-FIRST ANNUAL REPORT OF THE COLUMBIA INSTITUTION FOR THE DEAF AND DUMB.

COLUMBIA INSTITUTION FOR THE DEAF AND DUMB,
Kendall Green, Washington, D. C., October 2, 1908.

SIR: The number of students and pupils remaining in the institution July 1, 1907, was 115; admitted during the year, 39; since admitted, 42; total, 196. Under instruction since July 1, 1907, 113 males and 83 females, of which 140 have been in the collegiate department, representing 35 States, the District of Columbia, Canada, and Scotland, and 56 in the primary department. Of these 38 were admitted as beneficiaries of the District of Columbia and 94 were admitted to the collegiate department under the provisions of the act of Congress approved June 6, 1900. During the fiscal year 28 were discharged from the institution by graduation and otherwise.

In addition to the foregoing, 17 colored deaf-mutes of school age, properly belonging to the District of Columbia, have in pursuance of law been admitted through this institution to the Maryland School for Colored Deaf-Mutes.

A list of the names of students and pupils who have been under instruction in this institution since July 1, 1907, will be found appended in this report.

HEALTH.

Good health has prevailed generally among the students and pupils during the year, and no death has occurred in the institution.

COURSES OF INSTRUCTION.

No important changes have been made in the courses of instruction, but it has been decided to advance the requirements for admission to the college one year, this change to go into effect in 1909. It has been found necessary to make this advance in order that the standing of the college shall compare favorably with that of the colleges of the country. A circular giving detailed information as to what this change will require has been issued and sent to the schools for the deaf in the States.

LECTURES.

The following special lectures have been delivered during the year:

IN THE COLLEGE.

Dartmoor and Its Archæological Wonders, by President Gallaudet.
The Dreyfus Case, by Professor Fay.
The Founding of St. Augustine, by Professor Hotchkiss.

On Horseback in Virginia, by Professor Draper.
Moths and Butterflies, with exhibition of private collection, by Professor Ely.
Government Irrigation Projects in the West, by Professor Hall.
Cyrano de Bergerac, by Professor A. B. Fay.
Peter the Great, by Professor Day.
The English Origin of the Federal Republic of the United States, by Professor Gaw.

IN THE KENDALL SCHOOL.

Bunty MacLeod, the Boy Engineer, by Mr. Denison.
Brave Boys, by Mr. Denison.
Abraham Lincoln, by Mr. Ballard.
Conduct, by Mr. Kiesel.
President Roosevelt in Yellowstone Park, by Mr. Bryant.
Last Days of Pompeii, by Mr. Clark.
Alaskan Experiences, by Mr. Underhill.
Boyhood of Benjamin Franklin, by Mr. Michaelson.
Sir Isaac Newton, by Mr. Stone.

RECEIPTS AND EXPENDITURES.

The receipts and expenditures for the year under review will appear from the following detailed statements:

Receipts and expenditures, maintenance of institution.

RECEIPTS.

Balance from old account	$109.63
From the Treasury of the United States	73,000.00
Board and tuition	4,425.50
From treasurer of the institution	200.00
Total	77,735.13

EXPENDITURES.

Salaries and wages	$46,896.63
Miscellaneous repairs	310.09
Household and marketing	4,147.24
Meats	5,290.96
Groceries	3,766.26
Butter and eggs	1,921.72
Bread	1,902.78
Medical attendance and nursing	905.05
Telephone, electric clocks, and fire alarms	506.02
Furniture	217.82
Dry goods	642.17
Gas	899.10
Fuel	3,729.85
Feed	1,662.60
Medicines and chemicals	297.51
Books and stationery	439.05
Hardware	375.56
Plants, seeds, and tools	648.76
Blacksmithing	207.75
Carriage repairs	337.50
Ice	385.06
Live stock	335.00
Incidental expenses	295.76
Stamped envelopes	63.72
Auditing accounts	300.00
Printing	203.55
Lectures	75.00
Gymnasium apparatus	7.62
Harness and repairs	189.55
Balance	775.45
Total	77,735.13

Receipts and expenditures, special repairs.

RECEIPTS.

Treasury of the United States	$5,000.00

EXPENDITURES.

Lumber	$373.28
Plumbing and steam fitting	984.24
Mason work	607.15
Paper hanging	230.65
Painting and carpentry	571.69
Whitewashing	84.00
Slate roofing	161.03
Asphalt paving	878.22
Linoleum on halls	140.00
Paints, oils, and glass	458.58
Hardware and tools	511.16
Total	5,000.00

ESTIMATES FOR FISCAL YEAR ENDING JUNE 30, 1910.

The following estimates for the fiscal year ending June 30, 1910, have already been submitted:

For the support of the institution, including salaries and incidental expenses, for books and illustrative apparatus, and for general repairs and improvements, $77,000.

For repairs to the buildings of the institution, including plumbing and steam fitting, and for repairs to pavements within the grounds, $5,000.

For the maintenance and tuition of colored deaf-mutes of teachable age belonging to the District of Columbia in the Maryland School for Colored Deaf-Mutes, as authorized in an act of Congress approved March 3, 1905, $6,000.

The first estimate is larger by $4,000 than the amount appropriated for the same purpose for the fiscal year 1908; it is larger by only $2,000 than the amount estimated for the fiscal year 1909. The increase in the prices of many provisions led us to ask for the amount we did for this year, and as conditions in regard to prices remain practically unchanged, we are confident that the amount asked for to cover this increase is not unreasonable. The further increase of $2,000 is asked because it is evident to the board that the salaries of certain of our professors and instructors ought to be moderately increased. These professors and instructors have served several years at minimum salaries and their present rates of compensation are quite below the maximum which has been allowed in our institution to persons performing similar services. The board feels that these increases of salaries are entirely reasonable and really necessary, and hopes that Congress will not be unwilling to grant the small amount that will be required for the increase in salaries.

The estimate for repairs is the same as has been granted for several years.

The estimate for the education of the colored deaf-mutes of the District is somewhat larger than the amount appropriated for this year, but it is believed that the number to be provided for will be sufficiently greater to demand the amount which is asked for.

THE EXERCISES OF PRESENTATION DAY.

The public anniversary of the college was held in the college chapel on Wednesday, May 6.

Rev. Charles Wood, D. D., pastor of the Church of the Covenant, offered the opening prayer.

The orations and dissertations delivered by members of the graduating class were as follows:

Child Labor and Some of Its Results, Frederick Wilhelm Schoneman, Illinois.
The Artist in Verse, Belle Harriet Ren, Nebraska.
The Value of Irrigation to this Country, Alvin Lehman Kutzleb, Kentucky.
The Origin of the Week, Helen Northrop, Nebraska.
Tennyson's Point of View, Alice Gertrude Neldon, Ohio.

PRESENTATION OF CANDIDATES FOR DEGREES.

The following candidates for degrees were presented by Professor Fay, vice-president of the college.

Degree of bachelor of philosophy.

George Herman Harper, Alabama.
Leo Ralph Holway, Illinois.
Frederick Wilhelm Schoneman, Illinois.

Degree of bachelor of science.

William Cooper, Massachusetts.
Alvin Lehman Kutzleb, Kentucky.
Dean Ellsworth Tomlinson, Minnesota.

Degree of bachelor of arts.

Mazie Florence Britt, Kansas.
Snowa Pearl Frost, Kentucky.
May Winifred Jones, Ohio.
Willie Lee Kilgore, Texas.
Fanny Payson Kimball, Maine.
Alice Gertrude Neldon, Ohio.
Helen Northrop, Nebraska.
Belle Harriet Ren, Nebraska.
Odie William Underhill, North Carolina.
Thomas Stanton Williams, Kansas.

Degree of master of arts.

Henry L. Stafford, Washington, D. C., B. A., Gallaudet College, 1893.
Robert S. Taylor, North Carolina, B. A., Gallaudet College, 1901.
Oliver C. Stevens, Michigan, B. A., Gallaudet College, 1905.

NORMAL FELLOWS.

Degree of master of arts.

Edward Lewis Michaelson, B. A., St. Olaf College, Minnesota.
Isaac Victor Stone, B. S., Rutgers College, New Jersey.

NORMAL STUDENTS.

Margaret Elizabeth Compton, Episcopal Female Institute, Virginia.
Winifred Northrop, Nebraska Normal College, Nebraska.

REMARKS OF PRESIDENT GALLAUDET CONFERRING HONORARY DEGREES.

"The act of Congress authorizing and empowering the board of directors of this institution to grant and confirm degrees carried with it the power to confer honorary degrees. This power has not often been exercised by this college, but as we last year completed fifty years in the life of the institution it seems fitting to exercise this function at this time, and I have the honor to announce that four honorary degrees have been voted by the board.

"The degree of master of arts is given to Mr. Charles S. Deem, of Jackson, Miss. a gentleman who was a student in this college a number of years ago. He has been for twenty-four years an instructor in the Mississippi School for the Deaf, and it is thought fitting that he receive from the college where he nearly completed his academic education the honorary degree of master of arts.

"The degree of doctor of humane letters is conferred by colleges upon persons who have attained distinction in educational and other lines. Our board of directors has voted to confer this degree on three men of eminence in the education of the deaf:

"Upon Mr. W. H. Addison, who has been for more than twenty years a prominent instructor of the deaf in Scotland. He has been for a number of years at the head of the institution in Glasgow. He has visited the schools for the deaf in this country several times, and has initiated efforts for the establishment of an institution for the higher education of the deaf in Great Britain. It has been deemed fitting that in view of his public service in the cause of the education of the deaf this honor should be conferred upon him by our college.

"Mr. Francis D. Clarke, of Michigan, has been for almost forty years an educator of the deaf. He has been at the head of two institutions for the deaf, and is now in charge of the Michigan school. He has contributed much to the literature of our profession and has in many ways shown himself to be a master in the line of educational work among the deaf and is worthy the honor shown him.

"Mr. Charles W. Ely has been for more than thirty-five years the head of the Maryland School for the Deaf. He was an instructor of the deaf in the Ohio institution for a number of years before he took charge of the Maryland school, which he has managed so successfully all these years. He has in many ways contributed much to the work of educating the deaf, and we feel that he is well deserving of the honor which has been given him by the vote of our board."

In introducing the speaker of the day, President Gallaudet expressed his great pleasure at the cordial and friendly relations which have long existed between the students of Georgetown University and those of our college, and between the faculties of the two institutions, and said that it was most agreeable to have present the honored president of Georgetown University, who had kindly consented to address the students.

President Buel then delivered the following address:

PRESIDENT BUEL'S ADDRESS.

"Mr. PRESIDENT, GENTLEMEN OF THE BOARD OF DIRECTORS, AND CANDIDATES FOR PRESENTATION FOR DEGREES: It is a great pleasure for me to come here to-day to speak to you, and I esteem it a high honor that I have been selected by your worthy president, Doctor Gallaudet, to address you on this occasion.

"I presume that on occasions such as this the one who is selected to give the address is expected to have something to say in the way of friendly advice to those about to graduate. It has been some weeks since I was invited to give this address, and while it has not been the uppermost thought in my mind what I should say on this occasion, I have often thought of what good advice I could give you, what wholesome advice I could set before you.

"Several events that have occurred within recent months have directed my thoughts toward one subject in particular, and I can not get away from the fact that it seems the only thing I can say to you to-day. At first you may think it strange that I should select such a subject for an occasion like this, but I hope to be able to show you that there is method in my madness. I wish to say a few words to you on the subject of anarchy. Not that I imagine for a moment that you are anarchists. On the contrary, I presume that you have all been law-abiding students.

"Yet it seems to me that we can well on this occasion give the subject some thought.

"We are fond of saying that we English-speaking people are a law-abiding people. And, generally speaking, this is true. We are a law-abiding people, but little given to anarchy, while the Slavic peoples and the Italians and others that we can think of have a reputation of the opposite character.

"Yet in our country, in the North, East, South, and West, we have seen during the past few months striking instances of mob rule; we have seen people taking the law into their own hands not only in the country districts, but in our large cities, and even in our colleges and universities. We have read in the newspapers of several instances of the college student in his small world playing the part of the anarchist, rising up and refusing to obey constituted authority. We have seen him going on a strike, and, if we can believe the newspapers, going so far that all the civil authority of the State was not able to restrain him without much difficulty.

"I take it that we can not believe everything we read in the newspapers. I think there is often much exaggeration in the statements made therein. Still, I suppose there is some foundation for what we have read, and that in these cases, both in our country at large and in our colleges, there have been evidences of anarchy—uprisings against lawfully constituted authority.

"It seems to me that we who claim to be cultured and educated people (and you, my dear candidates for degrees, who are soon to go out with the seal of Gallaudet College upon you, you are going to join the ranks of cultured and educated men and women), it seems to me that it is our bounden duty to uphold the ideal of a law-abiding people and to discountenance any insubordination to lawful authority properly exercised.

"In order that we may more clearly see why we should as educated and cultured men and women discountenance whatever tends to the disregard of lawful authority, I would ask you to recall with me the idea of society. By civil society we mean a body of persons collectively united by common bonds, under common authority, united for common interests, aims, and ends.

"Just as in the statue of marble or bronze carved out by the sculptor, the material part, the rough stone or block of bronze, before it comes from the hands of the sculptor has no formal shape, so that by his skill he makes out of the rough marble or bronze a statue of George Washington, or a statue of Abraham Lincoln or of General Grant; so in the institution we speak of as civil society there is a material element and the formal part that brings it out is what we term authority. And it is the exercise of this authority that enables members of society by lawful means to reach a common end. Thus lawful authority implies the right of making laws and of enforcing them. So we have in the football team or the baseball nine, eleven men and nine men, and the authority of the captain or coach which is exercised over that baseball team or football eleven is exercised to attain success on the gridiron or the diamond according to the rules of the game. And penalties are imposed on those who do not live and act according to the rules of the game.

"And this, too, applies to civil society. Its object is to promote the common welfare. Man is by his very nature a social animal. He must, if he follows his nature, live in the company of other men.

"Thus arises the need for authority, a means of enforcing order, for as the poet Pope says, 'Order is Heaven's first law,' and the Holy Ghost inscribes in Holy Writ that the opposite state is where disorder and confusion reign.

"Where we have law and order we have peace and harmony, and where we have anarchy and insubordination we have the opposite. St. Paul in his letter to the Romans tells us that all authority comes from God, and that therefore he who resists authority resists the ordinance of God, and that they that resist bring to themselves damnation. Those of us who believe that Paul is an apostle, that he speaks words put into his mouth by the Holy Ghost, must then believe that resistance to lawful authority is an offense in the sight of God.

"In this country of ours, where we have government of the people, for the people, by the people, the question arises how the authority of God comes in. The state is a creature of God. There are several theories as to just how the authority of God is exercised in a country like this. The view that appeals to me most is that when we choose our presidents, members of congress, governors, and other officials, we designate these persons on whom God confers the authority. And this shows us the great mistake of taking the law into our own hands, of rising up and refusing to accept authority.

"As I said in the beginning, I think it is our duty as educated, cultivated people to uphold lawful authority. It is a menace to our nation that we can have in our midst people who take the law into their own hands, using the torch and the bomb of dynamite.

"It is important that we exercise extreme care not to let the spirit of disregard to lawful authority lay hold on us. Just once overstepping the moral law has seemed to good men a danger. They think it means a breaking of the fiber of the being, that it sullies the conscience,

and makes it easier to go wrong again. May it not be true in nations as with individuals, that in the nation where there are cases of anarchy here and there the nation may have its moral fiber deteriorated, if not disintegrated, by not checking this disregard of lawful authority at the very beginning.

"It is something that we ought to bear in mind. It should give us pause for thought, and cause us to reflect that upon us, the educated, cultivated people of the country, rests the obligation to stand for the cause of law and order, upon the preservation of which depends the safety and welfare of our country.

"This, then, is the thought I meant to put before you to-day. You are going out in a few weeks from the institution that has fostered you and trained you. You will go to all parts of the country, for all the educational institutions of Washington are more or less national in character. You come from North, East, South, and West. Carry with you when you go hence those high principles which you have learned here. Show there by your lives in the communities in which you reside that you are exerting all your influence on the side of law-abiding people, keeping ever high the standard of obedience to lawful authority properly exercised.

"In conclusion, I wish to congratulate you that you have come successfully so far in your course, and I take it that you who have done so well thus far will finish equally well, that you will pass your final examinations, and that you will go forth and be a credit not only to this institution, which has fostered you so carefully, but to our whole country at large."

The exercises of the day were closed with the benediction by Rev. John W. Chickering, emeritus professor in the college.

CONFERRING OF DEGREES.

On the closing day of the term, June 17, degrees were conferred in accordance with the recommendations of presentation day.

MEETING OF THE CONVENTION OF AMERICAN INSTRUCTORS OF THE DEAF.

A meeting of the Convention of American Instructors of the Deaf, an organization chartered by Congress, was held at Ogden, Utah, July 3–10, in the State Institution for the Deaf and the Blind located in that city. Professors Hall and Gaw, of our college faculty, represented this institution, and presented papers of value. Professor Hall was elected secretary of the convention and Professor Gaw was assistant secretary and official stenographer. A copy of the proceedings of the convention will be presented to Congress, as required by law.

All of which is respectfully submitted by order of the board of directors.

E. M. GALLAUDET, *President.*

The SECRETARY OF THE INTERIOR.

CATALOGUE OF STUDENTS AND PUPILS.

IN THE COLLEGE.

Alabama:
- G. Herman Harper.
- Walter D. Bell.
- Alton M. Bell.

Arizona:
- Ethel F. Eaton.

Arkansas:
- Ora H. Blanchard.
- James S. Bowen.
- Zeb Edmiston.
- Dean Horn.
- Mamie L. Wallace.

California:
- Golda M. Fitzgerald.
- Leslie A. Elmer.

Colorado:
- Mabel J. Jensen.
- John C. Clesson.

Connecticut:
- Michael Lapides.

District of Columbia:
- Maud E. Edington.

Florida:
- Alice A. Nicholson.
- Abbie M. Goff.

Georgia:
- Henry S. Morris.

Idaho:
- Leora M. Hughes.
- Lulu M. Lewis.

Illinois:
- Leo R. Holway.
- Frederick W. Schoneman.
- Goldie A. Newman.
- Iva M. Robinson.

Indiana:
- Leon P. Jones.

Iowa:
- Sarah B. Streby.
- Walter F. Poshusta.
- Luverne S. Byrne.
- Melvin Lien.
- Ragnhilda Lee.
- Effie S. Gifford.
- Elizabeth R. Rhoades.
- Hubert B. West.
- Ransom H. Arch.

Kansas:
- Mazie E. Britt.
- Thomas S. Williams.
- Mary J. Gillman.
- M. Edetha Williams.
- John T. Hower.
- Homer E. Grace.
- William Schaefer.
- George E. Pinto.
- Cora A. Denton

Kentucky:
- Snowa P. Frost.
- Alvin L. Kutzleb.
- Adolph N. Struck.
- Rose K. Bode.

Maine:
- Fannie P. Kimball.
- Leo K. Holmes.
- Patrick J. Thibodeau.

Manitoba:
- Charlotte H. Jameson.
- Archibald H. MacDonald.
- Archibald Wright, jr.

Maryland:
- Thomas J. Blake.

Massachusetts:
- Charles A. Malloch.
- William Cooper.

Michigan:
- Margaret M. Leveck.
- Harold Preston.
- George Burkart.
- Gottlieb Bieri.
- George F. Gorman.
- Ida M. Linabury.
- Inez I. Snyder.
- Belle Van Ostrand.
- Norman D. McDonald.
- Otto Buby.

Minnesota:
- Dean E. Tomlinson.
- Frederick J. O'Donnell.
- Ellen D. Johnson.
- Clarence Sharp.
- Philip E. Cadwell.
- Mary M. Fossan.
- Eva Bush.
- Petra F. Fandrem.

Mississippi:
- Shelby W. Harris.

Missouri:
- Elmer Talbert.
- Mary I. Morrison.
- Russell P. Handley.
- Jennie F. Susman.

Nebraska:
- Hattie B. Ren.
- Helen Northrop.
- Anna V. Johnson.
- Maude E. Roath.
- James Morehouse.
- Eugene Hogle.

New Jersey:
- Morton H. Henry.

New York:
- Arthur B. Dillon.
- Samuel Cohen.
- Edwin W. Nies.
- Vernon S. Birck.
- Margaret G. Sherman.

North Carolina:
- Odie W. Underhill.
- Emma L. Pike.
- George H. Bailey.
- Virgie A. Haywood.
- Charles E. Jones.
- Harley Brendall.
- Sarah K. Herring.

CATALOGUE OF STUDENTS AND PUPILS—Continued.

IN THE COLLEGE—Continued.

North Dakota:
- Gilbert J. Isackson.
- Carl Anderson.
- Olga Anderson.

Oregon:
- Bird L. Craven.
- Emery E. Vinson.
- Harry Gardner.

Ohio.
- Winifred M. Jones.
- Alice G. Neldon.
- William N. Toomey.
- John H. Mueller.
- William H. Arras.
- Helena Froelich.
- Emma J. Neumann.

Pennsylvania:
- Francis M. Holliday.
- Philip R. Schroedel.
- Emily A. S. Blackwood.
- Mary H. Burns.
- Hume L. Battiste.
- Carl M. Bohner.
- Charles W. W. Campbell.
- J. Wilbur Gledhill.
- Frederick H. Hughes.
- William W. King.

Pennsylvania—Continued.
- J. Clarence Reinmiller.
- Charles E. Sommer.

Scotland:
- Angus C. McInnes.

South Carolina:
- Annie L. Dwight.

South Dakota:
- Jessie A. Beardsley.
- Ella S. Olen.
- Ada R. Studt.

Texas:
- Willie L. Kilgore.
- Robert L. Davis.
- Mary B. Sharp.
- Thomas L. Anderson.
- Grover C. Farquhar.

Washington:
- Bertha Thiessen.
- Alice S. Hammond.

Wisconsin:
- Harry Hansmann.
- Harold Linde.
- Otto Schulze.
- Helen Wilcox.

Wyoming:
- Baxter W. Mosey.

IN THE KENDALL SCHOOL.

MALES.

Delaware:
- Walter Carmean.
- Robert Johnston.
- Arthur Long.
- Lewis J. Long.
- Raymond Webb.

District of Columbia:
- Raymond Allen.
- Benjamin Beaver.
- Frank Berman.
- Wallace Edington.
- Morton W. Galloway.
- William A. Gray.
- Frederick D. Hill.
- William U. Lynch.
- John W. McCauley.
- John McIntosh.
- John C. Miller.

District of Columbia—Continued.
- James A. Nash.
- Francis E. Ridgeway.
- Joseph P. Riley.
- William J. Riley.
- Sylvan J. Riley.
- Charles Shepherd.
- Leonard Stark.
- Joseph Stinson.
- Charles Sullivan.

Minnesota:
- Carl Torell.

New Jersey:
- Frank E. W. McMahon.

New York:
- Clinton F. C. Ensworth.

South Carolina:
- Osgood A. Darby.

FEMALES.

Delaware:
- Ida Ellingsworth.
- Cynthia Hearne.
- Florence Johnston.
- Isabelle Long.
- Ellen J. McCabe.
- Mary O'Rourke.
- Olivia Peterson.
- Glendora Taylor.

District of Columbia:
- Mary E. Blocher.
- Caroline E. Cox.
- Myrtle E. Connick.
- Maud E. Edington.
- Louise Golding.
- Beatrice Holland.
- Elsie Hutchins.
- Grace G. Kelly.

CATALOGUE OF STUDENTS AND PUPILS—Continued.

IN THE KENDALL SCHOOL—Continued.

FEMALES—continued.

District of Columbia—Continued.
Margaret M. Lewis.
Ida M. Littleford.
Matilda Maddox.
Annie P. Neitzey.
Virgie E. O'Neill.
Pearl J. Pearson.
Sophia Stansbury.
District of Columbia—Continued.
Laura Sykes.
Alice Woolford.
Florence Young.
Illinois:
Rose Edna Congdon.
West Virginia:
Frances V. Wagner.

REGULATIONS.

I. The academic year is divided into three terms, the first beginning on the Thursday before the last Thursday in September and closing on the 24th of December, the second beginning the 2d of January and closing the last of March, the third beginning the 1st of April and closing the Wednesday before the last Wednesday in June.

II. The vacations are from the 24th of December to the 2d of January, and from the Wednesday before the last Wednesday in June to the Thursday before the last Thursday in September.

III. There are holidays at Thanksgiving, Washington's Birthday, Easter, and Decoration Day.

IV. The pupils may visit their homes during the regular vacations and at the above-named holidays, but at no other time, unless for some special, urgent reason, and then only by permission of the president.

V. The bills for the maintenance and tuition of pupils supported by their friends must be paid semiannually in advance.

VI. The charge for pay pupils is $250 per annum. This sum covers all expenses in the primary department except clothing, and all in the college except clothing and books.

VII. All deaf-mutes of teachable age, of good mental capacity, and properly belonging to the District of Columbia, are received without charge. To students from the States and Territories who have not the means of defraying all the expenses of the college course the board of directors renders such assistance as circumstances seem to require, as far as the means at its disposal will allow.

VIII. It is expected that the friends of the pupils will provide them with clothing, and it is important that upon entering or returning to the institution they should be supplied with a sufficient amount for an entire year. All clothing should be plainly marked with the owner's name.

IX. All letters concerning pupils or applications for admission should be addressed to the president.

X. The institution is open to visitors during term time on Thursdays only, between the hours of 10 a. m. and 3 p. m. Visitors are admitted to chapel services on Sunday afternoons at 3 o'clock.

XI. Congress has made provision for the education, at public expense, of the indigent blind of teachable age belonging to the District of Columbia. Persons desiring to avail themselves of this provision are required by law to make application to the president of this institution.

REPORT OF THE FREEDMEN'S HOSPITAL.

FREEDMEN'S HOSPITAL.

BOARD OF VISITORS.

GEORGE W. EVANS. JOHN J. DARBY, M. D.

JAMES T. PARKER.

STAFF.

W. A. WARFIELD, M. D., *Surgeon in Chief.*
W. C. McNEILL, M. D., *First Assistant Surgeon and Executive Officer.*

CONSULTANTS.

Medical.—F. J. SHADD, M. D.; ROBERT REYBURN, M. D.
Surgical.—NEIL F. GRAHAM, M. D.
Obstetrical.—THOMAS C. SMITH, M. D.
Gynecological.—J. TABOR JOHNSON, M. D.

VISITING STAFF.

MEDICAL.

January, February, March.—H. W. FREEMAN, M. D.; J. B. NICHOLS, M. D
April, May, June.—D. W. PRENTISS, M. D.; GEO. W. CABANISS, M. D.
July, August, September.—ROBT. W. BROWN, M. D.; THOS. MARTIN, M. D.
October, November, December.—H. W. FREEMAN, M. D.; J. B. NICHOLS, M. D.

SURGICAL.

January, February, March.—E. A. BALLOCH, M. D.
April, May, June.—WM. A. JACK, JR., M. D.
July, August, September.—WM. A. JACK, JR., M. D.
October, November, December.—E. A. BALLOCH, M. D.
Necroscopist.—D. S. LAMB, M. D.

OBSTETRICAL.

January, February, March, April.—N. R. JENNER, M. D.
May, June, July, August.—E. D. WILLISTON, M. D.
September, October, November, December.—JNO. R. FRANCIS, M. D.
Genito-urinary.—H. A. FOWLER, M. D.

INTERNES.

R. R. JOHNSON, M. D. W. H. WILSON, M. D.
R. C. HUNTER, M. D. B. M. RHETTA, M. D.

OUT-PATIENT DEPARTMENT.

MEDICAL.

Monday.—SIDNEY BEHREND, M. D. *Thursday.*—E. A. TIGNOR M. D.
Tuesday.—C. A. TIGNOR, M. D. *Friday.*—HENRY FREEMAN, M. D.
Wednesday.—SIDNEY BEHREND, M. D. *Saturday.*—ALBERT RIDGELEY, M. D.

MINOR SURGERY.

Wednesday, Friday.—PAUL JOHNSON, M. D.

EYE AND EAR.

Tuesday, Thursday, Saturday.—R. S. LAMB, M. D.; CARL HENNING, M. D.

NOSE AND THROAT.

Wednesday, Saturday.—J. J. RICHARDSON, M. D.; R. R. WALKER, M. D.

DERMATOLOGY.

Friday.—H. A. ROBBINS, M. D.; ARTHUR J. HALL, M. D.

NERVOUS.

Monday, Thursday.—WM. L. ROBINS, M. D.; J. C. TAPPIN, M. D.

SARAH L. TUFFS, *Directress of Training School.* MARY J. JONES, *Matron.*
H. S. POPE, Phar. D., *Pharmacist.* HARRY CARDOZO, *Clerk.*
J. L. FITZGERALD, *Assistant Pharmacist.* L. R. WORMLEY, *Assistant Clerk.*

REPORT OF THE FREEDMEN'S HOSPITAL.

WASHINGTON, *September 9, 1908.*

SIR: I have the honor to submit for your consideration the annual report of the Freedmen's Hospital for the fiscal year ended June 30, 1908.

There was a considerable increase in the work over the previous year, and the results attained have been correspondingly satisfactory, notwithstanding the hospital occupied its old quarters for eight months of the year, with all its attending drawbacks.

The hospital was transferred to the new buildings February 26, 1908, one hundred and twenty-nine patients being moved without mishap. The completion and occupation of the new hospital mark an epoch in the history of this institution. From an asylum for the aged and infirm, it has grown, by reason of the liberality of a generous Government, to a modern institution, first class in every respect, the work classified into several departments, with an organization similar to that of the leading hospitals of the country, differing only in its relations to the General Government. These satisfactory conditions are the direct result of a reorganization which began May 12, 1898, when, by order of the Department of the Interior, a board of visitors, consisting of three officials of that department, was appointed. The organization thus begun and subsequently developed, viewed from an administration standpoint, made the hospital equal to the best. The practical operation of the plan in obtaining results and safeguarding the interests of the patients, the great object of our endeavors, after all, was assured, and in most instances the grounds for complaints have been more imaginary than real.

There were 154 patients remaining in the hospital at the beginning of the year; 2,434 were admitted and 235 births occurred during the year, making a total of 2,823 persons under care. Of this number, 1,964 were received as residents of the District of Columbia, under contract with the Board of Charities, and 859 were admitted as nonresidents. A total of 2,692 were discharged, as follows: 1,624 recovered; 632 improved; 113 unimproved; 36 not treated; 287 died; leaving 131 in the hospital at the beginning of the current fiscal year. Fifty-four of the deaths occurred within twenty-four hours after entering the hospital, their condition on admittance being such as to render hospital aid of no avail. Every year this class of patients is larger than it should be, due, undoubtedly, to many people seeking the hospital as a last resort.

The surgical work was heavier than ever before, 1,005 operations being performed with a mortality of 13, almost 99 out of every 100 operations being successful.

The following cases were treated in the out-patient department: Medical, 1,641; surgical, 573; ear, nose, and throat, 619; eye, 417; gynecological, 283; nervous, 317; skin and genito-urinary, 1,169—a total of 5,019, which is 388 more than the previous year.

The following tables show in detail the medical and surgical work:

Record of medical and surgical diseases.

Disease.	Remaining July 1, 1907.	Admitted.					Discharged.						Remaining July 1, 1908.
		White.		Colored.									
		Male.	Female.	Male.	Female.	Total.	Recovered.	Improved.	Unimproved.	Not treated.	Died.	Total.	
Bones, joints, and lymphatics.													
Bones:													
Osteo-myelitis—													
Femur	....	....	....	2	....	2	2	....	....	....	....	2	....
Tibia	1	....	....	2	2	5	4	1	....	....	....	5	....
Humerus	....	....	....	6	1	7	6	1	....	....	....	7	....
Radius	....	....	....	1	....	1	1	....	....	....	....	1	....
Joints:													
Bursitis of knee	....	1	....	2	3	6	5	....	1	....	....	6	....
Synovitis of knee	....	....	....	4	2	6	5	....	....	....	....	5	1
Genu valgum	....	....	....	1	....	1	1	....	....	....	....	1	....
Luxations:													
Humerus	....	....	....	3	....	3	3	....	....	....	....	3	....
Ulna	....	....	....	1	....	1	1	....	....	....	....	1	....
Radius	....	....	....	1	....	1	1	....	....	....	....	1	....
Subluxations:													
Ankle	....	....	....	3	1	4	4	....	....	....	....	4	....
Knee	....	....	....	1	....	1	1	....	....	....	....	1	....
Wrist	....	....	....	1	2	3	1	....	....	....	....	1	2
Lymphatics:													
Adenitis—													
Cervical	....	1	....	9	6	16	14	1	....	....	....	15	1
Submaxillary	....	....	....	2	3	5	5	....	....	....	....	5	....
Inguinal	2	1	....	20	2	25	20	....	....	1	....	21	4
Nervous system.													
Cerebral thrombosis	....	....	....	3	....	3	....	....	....	....	3	3	....
Cerebral hemorrhage	2	....	....	13	2	17	....	....	....	....	17	17	....
Cerebral concussion	....	....	....	2	....	2	1	....	....	....	1	2	....
Cephalagia	....	....	1	4	9	14	10	....	....	....	....	10	4
Senile dementia	....	....	....	1	....	1	....	....	....	....	1	1	....
Epilepsy	3	2	....	10	6	21	3	6	4	....	6	19	2
Imbecility	....	....	....	1	....	1	....	....	....	1	....	1	....
Heat exhaustion	....	....	....	9	....	9	3	....	....	....	6	9	....
Hysteria	1	....	....	1	4	6	2	3	1	....	....	6	....
Locomotor ataxia	....	1	....	8	....	9	2	3	2	....	2	9	....
Meningitis	....	....	....	2	2	4	....	....	....	....	4	4	....
Neuralgia:													
Facial	....	....	....	1	2	3	2	1	....	....	....	3	....
Intercostal	....	....	2	1	....	3	1	2	....	....	....	3	....
Ovarian	....	....	....	....	4	4	2	2	....	....	....	4	....
Neurasthenia	3	....	1	2	12	18	6	8	2	2	....	18	....
Cerebro-spinal meningitis	....	....	....	6	....	6	....	....	....	....	6	6	....
Heart and blood vessels.													
Anemia	1	....	....	2	2	5	3	2	....	....	....	5	....
Aneurism:													
Aorta	....	....	....	1	....	1	....	....	....	....	1	1	....
Carotid	....	....	....	1	....	1	....	....	1	....	....	1	....
Femoral	....	....	....	1	....	1	....	....	1	....	....	1	....
Popliteal	....	....	....	3	....	3	1	....	....	....	1	2	1
Aortic insufficiency	....	2	....	3	1	6	....	2	2	....	2	6	....
Aortic stenosis	....	....	....	1	3	4	....	1	2	1	....	4	....
Mitral insufficiency	3	3	....	16	22	44	....	5	19	1	14	39	5
Mitral stenosis	....	....	....	1	5	6	....	3	....	....	3	6	....
Arterio-sclerosis	....	....	....	1	3	4	....	....	....	....	3	3	1
Endocarditis	....	....	....	2	1	3	....	....	....	....	3	3	....
Epistaxis	....	....	....	2	....	2	....	....	....	....	....	....	2
Hemorrhoids	2	5	....	10	5	22	19	1	....	....	....	20	2
Pericarditis	....	1	....	4	....	5	....	1	....	....	4	5	....
Tachycardia	....	....	....	....	2	2	....	2	....	....	....	2	....
Varicose veins	....	....	....	....	5	5	5	....	....	....	....	5	....

Record of medical and surgical diseases—Continued.

Disease.	Remaining July 1, 1907.	Admitted.					Discharged.						Remaining July 1, 1908.
		White.		Colored.		Total.	Recovered.	Improved.	Unimproved.	Not treated.	Died.	Total.	
		Male.	Female.	Male.	Female.								
Respiratory system.													
Asthma:													
Bronchial	1	2	....	14	2	19	6	7	1	....	5	19	....
Cardiac	....	....	....	23	4	27	3	9	3	....	10	25	2
Bronchitis:													
Acute	....	10	2	142	123	277	32	243	....	2	....	277	....
Chronic	....	3	....	9	6	18	6	10	1	....	1	18	....
Capillary	....	....	1	3	....	4	2	2	....	....	....	4	....
Emphysema	....	....	....	1	4	5	....	2	....	....	3	5	....
Pleurisy	....	....	....	10	4	14	....	8	6	....	....	14	....
Pleurisy with effusion	....	....	....	1	....	1	....	....	....	....	1	1	....
Pneumonia:													
Lobar	3	....	....	18	11	32	20	3	....	....	9	32	....
Lobular	....	2	....	13	5	20	8	....	....	....	12	20	....
Tuberculosis:													
Pulmonary	5	10	....	29	5	49	....	6	12	....	30	48	1
General	....	....	....	3	3	6	....	....	....	....	6	6	....
Digestive system.													
Appendicitis	....	....	....	9	9	18	14	....	....	....	3	17	1
Ascarides lumbricoides	....	....	....	1	5	6	5	1	....	....	....	6	....
Cholera infantum	....	....	....	12	4	16	8	....	....	....	6	14	2
Constipation	....	....	....	2	1	3	2	1	....	....	....	3	....
Dysentery	2	4	....	2	....	8	5	1	....	....	1	7	1
Enteritis	....	....	....	5	3	8	5	....	....	....	3	8	....
Entero-colitis	....	....	....	1	2	3	....	....	....	....	3	3	....
Fissure of rectum	....	....	....	1	....	1	1	....	....	....	....	1	....
Fistula:													
In ano	....	....	....	4	3	7	6	1	....	....	....	7	....
Recto-vaginal	....	....	....	....	1	1	1	....	....	....	....	1	....
Recto-vesical	....	....	....	....	1	1	1	....	....	....	....	1	....
Gastro-enteritis	4	....	....	....	6	10	5	....	1	....	4	10	....
Gastralgia	....	....	1	....	3	4	4	....	....	....	....	4	....
Gastric ulcer	....	1	....	1	1	3	1	....	1	....	1	3	....
Gastritis:													
Acute	3	....	....	10	8	21	18	1	1	....	1	21	....
Chronic	....	1	....	5	2	8	4	2	1	1	....	8	....
Hernia:													
Inguinal	1	....	....	24	5	30	29	....	....	....	1	30	....
Inguinal strangulated	....	....	....	6	....	6	4	....	....	....	2	6	....
Umbilical	....	....	....	....	1	1	....	....	....	....	1	1	....
Indigestion	....	....	....	7	2	9	6	3	....	....	....	9	....
Intestinal obstruction	....	....	1	2	....	3	1	....	....	....	2	3	....
Peritonitis	....	....	....	2	4	6	6	....	....	....	....	6	....
Stomatitis	....	....	....	1	2	3	2	....	....	....	....	2	1
Liver:													
Cholelithiasis	....	....	....	1	....	1	....	1	....	....	....	1	....
Cirrhosis	2	....	....	3	1	6	....	5	....	....	1	6	....
Hepatitis	....	1	....	1	1	3	2	1	....	....	....	3	....
Diabetes mellitus	....	....	....	1	....	1	....	....	....	....	1	1	....
Genito-urinary system.													
Cystitis:													
Acute	....	....	....	14	4	18	11	4	....	....	....	15	3
Chronic	....	....	....	1	1	2	....	2	....	....	....	2	....
Epididymitis	....	....	....	6	....	6	5	1	....	....	....	6	....
Gonnorrhea:													
Acute	3	6	....	46	6	61	18	30	7	....	....	55	6
Chronic	....	4	....	20	1	25	5	18	....	2	....	25	....
Hydrocele	....	....	....	13	....	13	8	....	5	....	....	13	....
Hypospadias	1	....	....	2	....	3	....	3	....	....	....	3	....
Nephritis:													
Interstitial	....	4	....	32	6	42	10	20	....	....	12	42	....
Parenchymatous	6	2	....	26	4	38	9	18	3	....	8	38	....
Orchitis	....	....	....	13	....	13	6	7	....	....	....	13	....
Phimosis	1	8	....	15	....	24	20	....	4	....	....	24	....
Prostatic hypertrophy	....	1	....	4	....	5	4	....	....	....	1	5	....
Pyelitis	....	....	....	1	1	2	2	....	....	....	....	2	....
Stricture:													
Urethral	4	2	....	13	....	19	10	4	3	2	....	19	....
Rectal	1	....	....	2	2	5	2	3	....	....	....	5	....
Gangrene of scrotum	....	....	....	1	....	1	....	....	....	....	1	1	....

Record of medical and surgical diseases—Continued.

Disease.	Remaining July 1, 1907.	Admitted.					Discharged.						Remaining July 1, 1908.
		White.		Colored.		Total.	Recovered.	Improved.	Unimproved.	Not treated.	Died.	Total.	
		Male.	Female.	Male.	Female.								
Constitutional diseases.													
Debility:													
General				2	1	3		2			1	3	
Senile		1		4	2	7		2	4			6	1
Heat exhaustion				1		1					1	1	
Rachitis			1	11	3	15		3			9	12	3
Rheumatism:													
Acute	5	6		30	15	56	28	16	2	2		48	8
Chronic articular	3	4		13	2	22	10	8	4			22	
Acute inflammatory	3			9	1	13	4	6	3			13	
Chronic inflammatory				2		2		2				2	
Syphilis:													
Hereditary		1		2	2	5					5	5	
Primary		6	2	11	11	30	10	19	1			30	
Secondary	4	10		47	19	80	45	28	3		2	78	2
Tertiary	3	1		13	1	18		14			4	18	
Infectious diseases.													
Erysipelas						1				1		1	
Influenza	3	4	1	24	7	39	34	5				39	
Malaria	2			26	10	38	28	7	1		1	37	1
Parotiditis				3		3	1	2				3	
Tetanus				2		2					2	2	
Typhoid		2		34	12	48	38				5	43	5
Varicella				8	1	9	9					9	
Variola				5		5				5		5	
Gangrene				1		1					1	1	
Tumors.													
Angioma						1	1					1	
Carcinoma:													
Breast					4	4		1			1	2	2
Liver				2		2	1					1	1
Stomach					1	1			1			1	
Bladder					1	1			1			1	
Fibroma of breast					2	2	1					1	1
Lipoma:													
Back					1	1	1					1	
Breast					2	2	2					2	
Shoulder				1	2	3	3					3	
Papilloma of bladder					1	1					1	1	
Sarcoma:													
Breast					1	1			1			1	
Jaw				1		1			1			1	
Knee				1	1	2		1	1			2	
Buttocks	1					1					1	1	
Eye, ear, nose, and throat.													
Eye:													
Blepharitis				1	2	3	3					3	
Cataract	1			12	6	19	11			7		18	1
Conjunctivitis				10	8	18	17	1				18	
Hernia of iris				1		1	1					1	
Iritis				4	3	7	6					6	1
Keratitis	2			3	4	9	6	2		1		9	
Ophthalmia				1		1	1					1	
Ophthalmia, gonorrheal				2	3	5	4	1				5	
Ulcer of cornea				1	2	3	3					3	
Ear:													
Otitis media				3	4	7	6	1				7	
Mastoiditis				2	6	8	7				1	8	
Throat:													
Laryngitis			1	6	4	11	11					11	
Odema of glottis				1		1	1					1	
Tonsillitis:													
Acute	1	4		4	8	17	17					17	
Chronic		2		2	1	5	4					4	1

Record of medical and surgical diseases—Continued.

Disease.	Remaining July 1, 1907.	Admitted.					Discharged.						Remaining July 1, 1908.
		White.		Colored.		Total.	Recovered.	Improved.	Unimproved.	Not treated.	Died.	Total.	
		Male.	Female.	Male.	Female.								
Eye, ear, nose, and throat—Con.													
Pharyngitis:													
Acute	.....	1	1	18	10	30	24	6	.....	.....	.....	30	.....
Chronic	.....	.....	.....	6	2	8	3	4	.....	1	.....	8	.....
Nose:													
Polypus	.....	.....	.....	1	.....	1	1	.....	.....	.....	.....	1	.....
Rhinitis	.....	.....	.....	4	.....	4	.....	4	.....	.....	.....	4	.....
Obstetrics and gynecology.													
Abortion:													
Complete	4	.....	.....	.....	14	18	15	.....	.....	.....	3	18	.....
Threatened	.....	.....	.....	.....	3	3	1	.....	.....	.....	.....	1	2
Antiflexion	.....	.....	.....	.....	5	5	2	3	.....	.....	.....	5	.....
Antiversion	.....	.....	.....	.....	1	1	.....	1	.....	.....	.....	1	.....
Amenorrhea	.....	.....	.....	.....	8	8	5	3	.....	.....	.....	8	.....
Carcinoma of cervix	.....	.....	.....	.....	6	6	.....	2	2	1	1	6	.....
Cystic ovary and pyosalpinx	.....	.....	.....	.....	8	8	8	.....	.....	.....	.....	8	.....
Cystic ovary and salpingitis	.....	.....	.....	.....	28	28	25	3	.....	.....	.....	28	.....
Dysmenorrhea	1	.....	.....	.....	10	11	9	1	1	.....	.....	11	.....
Eclampsia, puerperal	.....	.....	.....	.....	10	10	2	.....	.....	.....	8	10	.....
Endometritis	1	.....	.....	.....	26	27	19	5	.....	.....	.....	24	3
Ectopic gestation	.....	.....	.....	.....	3	3	.....	.....	.....	.....	2	2	1
Fibroid of uterus	.....	.....	.....	.....	23	23	20	.....	.....	1	2	23	.....
Carcinoma of cervix	1	.....	.....	.....	3	4	1	2	.....	.....	1	4	.....
Cystic ovary	3	.....	.....	.....	12	15	12	.....	.....	3	.....	15	.....
Cystic ovary and fibroid of uterus	4	.....	.....	.....	21	25	21	.....	.....	1	2	24	1
Premature birth	.....	.....	.....	.....	10	10	.....	.....	.....	.....	10	10	.....
Pregnancy	22	.....	.....	.....	29	251	235	.....	.....	.....	.....	235	16
Births	12	.....	.....	.....	35	247	235	.....	.....	.....	.....	235	12
Post partum hemorrhage	.....	.....	.....	.....	7	7	6	.....	.....	.....	1	7	.....
Puerperium	1	.....	.....	.....	9	10	8	2	.....	.....	.....	10	.....
Pyosalpinx	5	.....	.....	.....	16	21	17	.....	.....	.....	1	18	3
Salpingitis and cystic ovary	1	.....	.....	.....	4	5	5	.....	.....	.....	.....	5	.....
Lacerated cervix	.....	.....	.....	.....	4	4	4	.....	.....	.....	.....	4	.....
Lacerated perineum	.....	.....	.....	.....	6	6	4	.....	.....	.....	.....	4	2
Leucorrhea	.....	.....	.....	.....	1	1	1	.....	.....	.....	.....	1	.....
Menorrhagia	.....	.....	.....	.....	2	2	2	.....	.....	.....	.....	2	.....
Metritis	.....	.....	.....	.....	3	3	3	.....	.....	.....	.....	3	.....
Ovaritis	.....	.....	.....	.....	5	5	4	1	.....	.....	.....	5	.....
Procidentia	.....	.....	.....	.....	2	2	1	.....	.....	.....	.....	1	1
Infants with mothers	.....	.....	.....	.....	4	4	4	.....	.....	.....	.....	4	.....
Retained placenta	.....	.....	.....	.....	8	8	8	.....	.....	.....	.....	8	.....
Retroflexion	.....	.....	.....	.....	2	2	1	1	.....	.....	.....	2	.....
Retroversion	.....	.....	.....	.....	4	4	3	1	.....	.....	.....	4	.....
Subinvolution	.....	.....	.....	.....	1	1	1	.....	.....	.....	.....	1	.....
Vaginitis	.....	.....	.....	.....	2	2	2	.....	.....	.....	.....	2	.....
Vulvitis	.....	.....	.....	.....	2	2	2	.....	.....	.....	.....	2	.....
Abscess, infection, etc.													
Abscess:													
Abdominal wall	.....	1	.....	.....	.....	1	1	.....	.....	.....	.....	1	.....
Alveolar	.....	.....	1	.....	.....	1	1	.....	.....	.....	.....	1	.....
Axillary	.....	.....	.....	.....	1	1	1	.....	.....	.....	.....	1	.....
Ischio-rectal	1	2	.....	6	1	10	8	.....	.....	.....	.....	8	2
Liver	.....	.....	.....	1	.....	1	.....	.....	.....	.....	1	1	.....
Pelvic	.....	.....	.....	.....	4	4	2	.....	.....	.....	2	4	.....
Peri-urethral	.....	.....	.....	4	.....	4	3	.....	.....	.....	.....	3	1
Peri-tonsillar	.....	.....	.....	1	1	2	2	.....	.....	.....	.....	2	.....
Psoas	.....	1	.....	1	1	3	.....	.....	.....	.....	1	1	2
Carbuncle	.....	.....	.....	2	.....	2	1	.....	.....	.....	1	2	.....
Cellulitis:													
Hand	2	.....	.....	4	1	7	7	.....	.....	.....	.....	7	.....
Arm	.....	1	.....	1	.....	2	2	.....	.....	.....	.....	2	.....
Leg	.....	.....	.....	1	.....	1	1	.....	.....	.....	.....	1	.....
Gangrene:													
Foot	.....	.....	.....	2	.....	2	1	.....	.....	.....	1	2	.....
Leg	.....	.....	.....	1	.....	1	.....	.....	.....	.....	1	1	.....

Record of medical and surgical diseases—Continued.

Disease.	Remaining July 1, 1907.	Admitted.					Discharged.						Remaining July 1, 1908.
		White.		Colored.		Total.	Recovered.	Improved.	Unimproved.	Not treated.	Died.	Total.	
		Male.	Female.	Male.	Female.								
Abscess, infection, etc.—Con.													
Ulcers:													
Foot	3	1				4	2	1	1			4	
Leg			1	1	4	6	2					2	4
Back				1		1	1					1	
Skin diseases.													
Eczema		1		2	1	4	3					3	1
Lupus				1		1			1			1	
Sebaceous cyst				1		1	1					1	
Injuries.													
Burns:													
Arm and chest	1			1		2	2					2	
Chest				1		1	1					1	
Body		1		1		2					1	1	1
Face				1	1	1	1					1	
Arm					1	1	1					1	
Hand						1	1					1	
Legs	1	1		1		3	3					3	
Fractures:													
Femur	2				1	3	2					2	1
Spine				1		1					1	1	
Collés				2	1	3	2					2	1
Humerus				2		2	1					1	1
Humerus and radius		1		1		2	2					2	
Radius and ulna				1		1	1					1	
Ribs				6		6	4					4	2
Jaw	2			1		3	2					2	1
Skull		1		3		4	2				2	4	
Sternum				1		1	1					1	
Fibula and tibia				2		2	2					2	
Wounds:													
Contused—													
Abdomen				1		1	1					1	
Back				1	4	5	5					5	
Chest				1		1	1					1	
Foot		2		2		4	4					4	
Hand					2	2	2					2	
Knee				3		3	3					3	
Leg				2		2	1					1	1
Scalp		10		10	3	23	20	3				23	
Thigh				1		1	1					1	
Incised—													
Arm				1		1	1					1	
Back				1		1	1					1	
Chest		1		2		3	3					3	
Hand				1		1	1					1	
Scalp		3		3	1	7	6	1				7	
Lacerated—													
Arm	1			2	1	4	4					4	
Back				1		1	1					1	
Face				2		2	2					2	
Leg				1		1	1					1	
Scalp				4	1	5	5					5	
Gun shot—													
Abdomen				1	1	2	2					2	
Chest	1			2		3	3					3	
Face				1		1	1					1	
Scalp				1		1	1		1			1	
Thigh				1		1							1
Poisons—													
Alcoholism	1	2		9	1	13	4	6			3	13	
Arsenical				1		1	1					1	
Carbolic acid			1		2	3	3					3	
Lead				1		1	1					1	
Opium				1		1	1					1	
Chloroform				1		1					1	1	
Total	154	149	18	1,196	1,306	2,823	1,624	632	113	36	287	2,692	131

Operations and results.

Operation.	Diagnosis.	White.		Colored.		Total.	Recovered.	Improved.	Unimproved.	Died.
		Male.	Female.	Male.	Female.					
Amputation	Gangrene of foot			4		4	4			
	Gangrene of foot and leg				1	1	1			
	Gangrene of toe			3	1	4	4			
	Supernumerary fingers and toes			3		3	3			
	Carcinoma of breast				5	5	4			1
	Hypertrophy of labia majora				1	1	1			
	Tuberculosis of hip			1		1		1		
	Diffuse hypertrophy of breast				1	1	1			
	Gumma of leg				1	1	1			
	Osteomyelitis of tibia	1		2		3	2	1		
	Osteomyelitis of femur	1				1	1			
	Tuberculosis of knee joint			2		2	1		1	
	Sarcoma of elbow joint			1		1	1			
	Sarcoma of femur			1		1		1		
	Necrosis of fingers			4	1	5	5			
	Tuberculosis of elbow			1		1	1			
Appendectomy	Appendicitis			6	5	11	11			
	Appendicitis, suppurative			4	2	6	6			
	Appendicitis, gangrenous			1		1				1
Aspiration	Hydrocele			8		8	7	1		
	Pleurisy with effusion			1		1		1		
Cauterization	Phagedenic chancroid			3		3		3		
	Fissure of rectum			2		2	2			
	Condylomata			1	6	7	6	1		
Celiotomy:										
Salpingo-oophorectomy.	Bilateral pyosalpinx and cystic ovary.				8	8	8			
	Ectopic pregnancy				3	3	2			1
	Cystic degeneration of ovary and salpingitis.				28	28	28			
Hysterosalpingo-oophorectomy.	Fibroid of uterus and cystic ovary				21	21	20			1
Oophorectomy	Cystic ovary				12	12	12			
	Papillomatous degeneration of ovary.				1	1		1		
	Dermoid cyst of ovary				1	1	1			
Hysterectomy	Multinodular fibroid of uterus				18	18	17			1
	Fibroid of uterus and bilateral pyosalpinx, cystic ovary.				8	8	8			
Hysterectomy and appendectomy.	Fibroid of uterus and appendicitis				4	4	4			
Myomectomy	Fibroid of uterus				3	3	3			
Oophoro-myomectomy	Fibroid of uterus and cystic ovary				2	2	2			
Hysterectomy, vaginal	Fibroid of uterus				2	2	2			
Extraction of bullet and suturing of liver and gall bladder.	Bullet wound of liver and gall bladder.				1	1	1			
Salpingectomy	Pyosalpinx				17	17	17			
Salpingo-appendectomy.	Pyosalpinx and suppurative appendicitis.				2	2	1			1
Circumcision	Elongated prepuce			27		27	27			
Colpotomy, posterior	Pelvic abscess				5	5	2	2	1	
Colporrhaphy and bladder fixation.	Cystocele and prolapse of uterus				1	1	1			
Curettage	Chronic endometritis				24	24	19	4	1	
	Varicose ulcer				3	3		1	2	
	Retained placenta				8	8	8			
	Necrosis of sternum			1		1			1	
Cystotomy, suprapubic	Vesical calculi			4		4	4			
Dilatation	Stricture of urethra			8		8	6	2		
Dilatation and incision	Stricture of urethra and scrotal abscess.			2		2	2			
	Stricture of urethra and perineal abscess.			1		1	1			
Enucleation	Cataract			4	7	11	11			
Excision	Tuberculosis of hip joint			1		1		1		
	Fracture of skull	1		1		2	2			
	Tuberculosis of knee joint			1		1		1		
	Hemorrhoids			10	4	14	12	2		
	Keloids			3	2	5	3	2		
	Carbuncle			1		1	1			
	Gumma of testicle			2		2	2			
Herniotomy	Inguinal hernia			15	1	16	16			
	Inguinal hernia bilateral			4		4	4			
	Inguinal hernia strangulated			8		8	6			2
	Ventral hernia			2	2	4	4			
	Umbilical hernia			2	3	5	5			
Extirpation	Inguinal adenitis	1		20	3	24	20	4		
	Cervical adenitis			8	2	10	9	1		

Operations and results—Continued.

Operation.	Diagnosis.	White.		Colored.		Total.	Recovered.	Improved.	Unimproved.	Died.
		Male.	Female.	Male.	Female.					
Extirpation	Popliteal aneurism	....	....	1	....	1	1	....	....	....
	Sebaceous cyst of scalp	....	....	4	1	5	5	....	....	....
Incision	Cellulitis of foot	....	....	2	1	3	3	....	....	....
	Cellulitis of jaw	....	....	1	....	1	1	....	....	....
	Cellulitis of hand	....	....	6	2	8	8	....	....	....
Incision and drainage	Ischio-rectal abscess	....	....	9	1	10	9	1	....	....
	Large abscess of thigh	....	....	2	....	2	2	....	....	....
	Peri-rectal abscess	....	....	2	....	2	2	....	....	....
	Psoas abscess	....	....	1	2	3	....	3	....	....
	Peri-urethral abscess	....	....	1	....	1	1	....	....	....
	Hepatic abscess	....	....	2	....	2	1	....	1	....
	Perineal abscess	....	....	1	....	1	1	....	....	....
	Subphrenic abscess	....	....	2	....	2	2	....	....	....
	Teno-synovitis of hand	....	....	2	....	2	2	....	....	....
Iridectomy	Cataract senile	....	....	4	....	4	3	1	....	....
Ligation	Varicose veins	....	....	....	3	3	3	....	....	....
Ligation of saphenous	Varicose veins	....	....	....	3	3	2	1	....	....
Lumbar puncture	Cerebro-spinal meningitis	....	....	5	1	6	1	1	....	4
Prostatectomy	Hypertrophy of prostate	....	....	5	....	5	4	....	....	1
Para centesis	Hydroperi toneum	....	....	8	3	11	....	8	3	....
Reduction	Fracture of scaphoid	....	....	1	....	1	1	....	....	....
	Fracture of tibia	....	....	2	....	2	2	....	....	....
	Fracture of patella	1	....	2	....	3	3	....	....	....
	Fracture of femur	....	....	1	1	2	2	....	....	....
	Fracture of humerus and wrist	1	....	....	....	1	1	....	....	....
	Fracture of inferior maxillary	....	....	2	....	2	2	....	....	....
	Dislocation of hip	....	....	2	....	2	2	....	....	....
	Dislocation of elbow	....	....	2	....	2	2	....	....	....
	Dislocation of humerus	....	....	3	1	4	4	....	....	....
Resection of knee joint	Tuberculosis of knee joint	....	....	2	....	2	....	1	1	....
Resection of elbow joint	Tuberculosis of elbow joint	....	....	....	1	1	1	....	....	....
Perineorrhaphy	Lacerated perineum	....	....	....	6	6	5	1	....	....
Suturing	Ruptured tendo, Achilles	....	....	1	....	1	1	....	....	....
	Lacerated scalp	14	1	87	14	116	110	6	....	....
	Lacerated face	4	....	26	8	38	34	4	....	....
	Lacerated arm	2	....	8	1	11	11	....	....	....
	Lacerated hand	9	....	24	7	37	....	5	....	....
	Lacerated thigh	1	....	6	....	7	7	....	....	....
	Lacerated leg	2	....	4	1	7	7	....	....	....
	Lacerated foot	....	....	12	2	14	12	2	....	....
	Lacerated toes	....	....	8	1	9	9	....	....	....
	Incised scalp	22	....	106	44	172	170	2	....	....
	Incised face	4	....	20	12	36	36	....	....	....
	Incised arm	....	1	4	1	6	6	....	....	....
	Incised hand	....	2	11	5	18	15	3	....	....
	Incised back	....	....	6	1	7	7	....	....	....
	Incised leg	2	....	4	....	6	6	....	....	....
Trachelorrhaphy	Lacerated cervix	....	....	....	4	4	4	....	....	....
Urethrotomy	Stricture of urethra	....	....	10	....	10	9	1	....	....
Total		66	4	588	447	1,005	911	69	12	13

Obstetrical record.

Month.	White.		Colored.		Total.	Forceps.	Podalic version.	Placenta previa.	Lacerations.	Post-partum hemorrhage.	Head.	Breech.	Foot.	Primipara.	Multipara.
	Male.	Female.	Male.	Female.											
July	....	....	12	9	21	2	....	....	2	1	21	....	....	10	11
August	....	....	10	8	18	1	1	1	1	....	17	1	....	9	9
September	....	....	9	6	15	....	1	....	....	....	15	....	....	8	7
October	....	....	15	9	24	1	....	....	2	....	24	....	....	16	8
November	....	....	10	7	17	....	....	....	....	....	15	1	1	9	8
December	....	....	12	12	24	2	....	....	1	1	24	....	....	11	13
January	....	....	7	7	14	....	....	....	1	....	14	....	....	9	5
February	....	....	7	10	17	....	1	....	2	....	15	2	....	10	7
March	....	....	16	19	35	2	....	....	1	....	25	....	....	14	16
April	....	....	11	7	18	1	....	....	1	1	17	1	....	12	1
May	....	....	11	7	18	1	1	....	1	....	17	....	1	8	10
June	....	....	12	12	24	1	....	....	1	....	24	....	....	17	7
Total	....	....	132	103	245	11	4	1	13	3	228	5	2	133	102

Emergencies.

Month.	White.		Colored.		Total.	Month.	White.		Colored.		Total.
	Male.	Female.	Male.	Female.			Male.	Female.	Male.	Female.	
July	12	1	60	21	94	February	1	.....	25	11	37
August	8	2	48	12	70	March	11	1	44	20	76
September	16	1	70	22	109	April	4	.....	41	12	57
October	8	.....	42	11	71	May	6	.....	30	8	44
November	9	1	61	18	89	June	8	1	36	10	55
December	6	2	55	11	74						
January	14	.....	28	10	52	Total	103	9	540	166	818

Cases treated in out-patient department.

Diagnosis.	White.		Colored.		Total.	Diagnosis.	White.		Colored.		Total.
	Male.	Female.	Male.	Female.			Male.	Female.	Male.	Female.	
Medical.						*Medical*—Continued.					
Anæmia	....	1	.....	.....	1	Typhoid fever	....	....	1	1	2
Angina pectoris	....	....	.....	1	1	Tuberculosis	1	....	84	45	130
Anorexia	....	....	.....	2	2	Varicella	....	....	6	1	7
Aortic insufficiency	....	....	10	1	11	Vertigo	....	....	18	9	27
Aortic stenosis	....	....	4	.....	4	Total	21	6	936	678	1,641
Arterio sclerosis	....	....	6	1	7	*Surgical.*					
Ascaris lumbricoides	....	....	3	.....	3						
Asthma:						Adenitis:					
Cardiac	....	....	11	6	17	Cervical	....	....	14	6	20
Bronchial	....	....	6	2	8	Inguinal	....	....	22	3	25
Bronchitis:						Abscess:					
Acute	2	....	165	140	307	Cervical	....	....	1	1	2
Chronic	6	3	130	140	279	Chest	....	....	1	.....	1
Capillary	....	....	15	12	27	Inguinal	....	....	1	8	9
Cardiac hypertrophy	1	....	8	2	11	Balanitis	....	....	5	.....	5
Cholera infantum	....	....	10	8	18	Contusion	....	....	36	16	52
Constipation	2	....	74	92	168	Cholelithiasis	....	....	1	1	2
Chlorosis	....	....	.....	5	5	Dislocated humerus	....	....	8	.....	8
Cirrhosis of liver	....	....	4	.....	4	Dislocated wrist	....	....	6	1	7
Debility, senile	....	....	42	18	60	Epistaxis	....	....	9	3	12
Diabetes mellitus	....	....	6	1	7	Fractures:					
Diarrhea	....	1	22	14	37	Ulna	....	....	6	.....	6
Enteritis	....	....	14	6	20	Clavicle	....	....	4	.....	4
Erythema	....	....	2	3	5	Gangrene:					
Gastralgia:						Foot	....	....	6	.....	6
Acute	....	....	4	1	5	Finger	....	....	1	1	2
Chronic	....	....	2	1	3	Hemorrhoids	....	....	19	8	27
Gastritis:						Hernia	....	....	6	1	7
Acute	1	....	30	15	46	Infection:					
Chronic	....	....	12	6	18	Hand	....	....	10	1	11
Intestinal indigestion	....	....	22	9	31	Back	....	....	6	.....	6
Influenza	6	....	28	42	76	Foot	....	....	12	3	15
Lumbago	....	....	24	16	40	Keloid	....	....	8	2	10
Malaria	....	....	40	15	55	Lipoma	....	....	1	3	4
Marasmus	....	....	6	3	9	Mastitis	....	....	1	1	2
Mitral insufficiency	....	....	32	12	44	Proctitis	....	....	2	.....	2
Mitral stenosis	1	....	18	6	25	Sprain:					
Nephritis:						Wrist	1	....	4	1	6
Acute	1	....	34	22	67	Ankle	....	....	6	.....	6
Chronic	....	....	8	2	10	Stricture of urethra	1	....	22	.....	23
Parotitis	....	....	2	.....	2	Ulcer of leg	....	....	4	10	14
Pleurisy:						Varicocele	....	....	8	.....	8
Acute	....	1	9	6	16	Vaccination	....	....	121	150	271
Chronic	....	....	2	.....	2	Total	2	....	358	213	573
Pertussis	....	....	2	1	3						
Pleurodynia	....	....	4	3	7	*Ear, nose, and throat.*					
Pneumonia:											
Lobar	....	....	2	1	3	Adenoids	....	....	11	19	30
Lobular	....	....	3	.....	3	Ceruminous impaction	....	....	6	12	18
Rachitis	....	....	4	2	6	Ethmoiditis	....	....	1	1	2
Synovitis	....	....	3	5	8						
Sciatica	....	....	1	.....	1						
Stomatitis	....	....	3	.....	3						

Cases treated in out-patient department—Continued.

Diagnosis.	White.		Colored.		Total.
	Male.	Female.	Male.	Female.	
Ear, nose, and throat—Continued.					
Foreign body in ear			4	6	10
Hypertrophy of tonsils			28	41	69
Hypertrophy of turbinates			15	12	27
Laryngitis:					
Acute			22	41	63
Chronic			8	12	20
Mastoiditis			4	2	6
Otitis media			9	8	17
Oedema of uvula			8	12	20
Pharyngitis:					
Acute			38	50	88
Chronic			15	18	33
Polypus of nose			4	2	6
Rhinitis			51	40	91
Stricture of esophagus				1	1
Stenosis of eustachian tube			1		1
Tonsilitis:					
Acute	1		32	60	93
Chronic			8	15	23
Tinnitus aurium	1				1
Total	2		265	352	619
Eye.					
Astigmatism			14	8	22
Blepharitis			9	3	12
Cataract			8	2	10
Chalazion	1	2	20	32	55
Conjunctivitis:					
Acute	1	1	62	70	134
Chronic			19	8	27
Corneal opacity			6	2	8
Corneal ulcer			2	2	4
Ecchymosis			23	4	27
Epiphora			3	1	4
Hordeolum			6	3	9
Iritis:					
Acute			18	12	30
Chronic			6	2	8
Keratitis:					
Acute			12	8	20
Chronic			3	2	5
Myopia			3	8	11
Ophthalmia			6	2	8
Ptyrigium			4		4
Ptosis			1	1	2
Strabismus:					
External			6	1	7
Internal			2	1	3
Tarsal tumors			6	1	7
Total	2	3	239	173	417
Gynecological.					
Antiflexion		1		12	13
Amenorrhea				22	22
Abortion				2	2
Endometritis				42	42
Endocervicitis				19	19
Leucorrhea				12	12
Lacerated perineum				6	6

Diagnosis.	White.		Colored.		Total.
	Male.	Female.	Male.	Female.	
Gynecological—Continued.					
Menorrhagia				42	42
Menopause				39	39
Pregnancy				25	25
Pruritis				14	14
Pelvic cellulitis				4	4
Prolapse of uterus				1	1
Retroversion		1		23	24
Salpingitis				9	9
Vaginitis				8	8
Vulvitis				1	1
Total		2		281	283
Nervous diseases.					
Cerebral hemorrhage			8		8
Cerebral embolism			1		1
Cerebral softening			1		1
Cerebral syphilis			2		2
Chorea				1	1
Epilepsy			62	15	77
Epilepsy, idiopathic			1		1
Exophthalmic goiter				6	6
Goiter				8	8
Hysteria			1	21	22
Hystero-neurasthenia				2	2
Hypochondriasis				1	1
Neuralgia:					
Supraorbital			1		1
Facial			4	9	13
Intercostal			6	1	7
Neurasthenia			42	101	143
Neuritis			6	4	10
Senile debility			4		4
Thyroid enlargement				1	1
Locomotor ataxia			8		8
Total			147	170	317
Skin—Genito-urinary.					
Acne			12	7	19
Urticaria			5	2	7
Chancroid	1		42		43
Chordee			6		6
Cystitis			62	22	84
Dermatitis			15	3	18
Eczema			22	30	52
Epididymitis			14		14
Furunculosis			8	6	14
Gonorrhea			201	41	242
Herpes			2		2
Orchitis:					
Acute			12		12
Chronic			4		4
Paraphimosis			21		21
Psoriasis			1		1
Syphilis:					
Primary	12		142	92	246
Secondary	6		180	64	250
Tertiary	3		90	21	114
Tinea capitis			16	4	20
Total	22		855	292	1,169

Occupation of patients.

Occupation.	White.		Colored.		Total.	Occupation.	White.		Colored.		Total.
	Male.	Female.	Male.	Female.			Male.	Female.	Male.	Female.	
Agent	2	....	9	.....	11	Merchant	4	....	11	.....	15
Barber	1	....	14	.....	15	Messenger	1	....	16	.....	17
Bellboy	....	....	3	.....	3	Miner	....	....	19	.....	19
Blacksmith	1	....	3	.....	4	Minister	....	....	3	.....	3
Bootblack	....	....	12	.....	12	Musician	....	....	10	.....	10
Bricklayer	3	....	2	.....	5	No occupation	11	8	129	47	195
Butler	1	....	5	.....	6	Nurse	....	....	....	9	9
Carpenter	3	....	14	.....	17	Painter	3	....	10	.....	13
Carpet layer	....	....	2	.....	2	Paper hanger	2	....	....	.....	2
Chambermaid	....	....	.....	17	17	Pharmacist	....	....	4	.....	4
Clerk	4	1	9	1	15	Physician	2	....	3	.....	5
Coachman	1	....	7	.....	8	Pianist	....	....	2	.....	2
Cook	1	2	5	8	16	Plasterer	1	....	2	.....	3
Dairyman	1	....	.....	.....	1	Policeman	3	....	1	.....	4
Detective	1	....	.....	.....	1	Porter	....	....	33	.....	33
Domestic	....	5	.....	913	918	Sailor	5	....	1	.....	6
Driver	3	....	39	.....	42	Seamstress	....	....	.....	59	59
Electrician	2	....	1	.....	3	Shoemaker	....	....	13	.....	13
Elevator man	....	....	14	.....	14	Soldier	19	....	3	.....	22
Engineer	1	....	1	.....	2	Steward	1	....	4	.....	5
Farmer	11	....	31	.....	42	Stonecutter	2	....	....	.....	2
Fireman	....	....	4	.....	4	Student	6	....	37	62	105
Grocer	1	....	18	.....	19	Tailor	1	....	5	.....	6
Hostler	....	....	14	.....	14	Teacher	2	....	11	7	20
Huckster	....	....	15	.....	15	Teamster	....	....	18	.....	18
Iceman	4	....	1	.....	5	Trained nurse	....	....	.....	3	3
Janitor	....	....	7	.....	7	Unknown	5	1	45	23	74
Laborer	29	....	409	.....	438	Valet	....	....	1	.....	1
Laundress	....	1	.....	44	45	Waiter	....	....	37	.....	37
Lawyer	1	....	3	.....	4	Waitress	....	....	.....	9	9
Liveryman	1	....	.....	.....	1	Watchman	1	....	3	.....	4
Machinist	8	....	.....	.....	8						
Masseur	....	....	1	1	2	Total	149	18	1,064	1,203	2,434

Nativity of patients.

Nativity.	White.		Colored.		Total.	Nativity.	White.		Colored.		Total.
	Male.	Female.	Male.	Female.			Male.	Female.	Male.	Female.	
Alabama	....	....	3	1	4	North Carolina	2	....	22	37	61
Arizona	1	....	.....	.....	1	Ohio	1	1	14	7	23
California	....	1	.....	.....	1	Oklahoma	1	....	.....	.....	1
Connecticut	1	....	.....	1	2	Pennsylvania	3	2	19	36	60
Delaware	....	1	3	.....	4	Porto Rico	....	....	2	.....	2
District of Columbia	8	2	385	370	765	South Carolina	....	....	3	7	10
Florida	....	....	1	4	5	Texas	1	....	3	1	5
Georgia	....	....	7	3	10	Virginia	18	1	269	314	602
Idaho	....	1	.....	.....	1	Washington	1	....	.....	.....	1
Illinois	1	....	4	.....	5	West Virginia	4	....	28	29	51
Indiana	1	....	.....	.....	1	Canada	2	....	1	.....	3
Iowa	....	1	.....	.....	1	Cuba	....	....	3	1	4
Kansas	....	....	1	.....	1	France	3	1	.....	.....	4
Kentucky	2	....	.....	1	3	Germany	7	....	.....	.....	7
Louisiana	....	....	3	2	5	Ireland	33	....	.....	.....	33
Maryland	11	3	244	356	614	Italy	18	....	.....	.....	18
Massachusetts	2	1	3	1	7	Russia	15	....	.....	.....	15
Mississippi	....	....	4	3	7	Spain	4	....	.....	.....	4
New Hampshire	1	....	.....	.....	1	Unknown	....	....	28	21	49
New Jersey	....	2	3	11	16	Venezuela	....	....	1	.....	1
New Mexico	....	....	1	.....	1						
New York	8	1	9	7	25	Total	149	18	1,064	1,123	2,434

Patients admitted each year for the past thirty-four years.

Year ending June 30:		Year ending June 30:		Year ending June 30:	
1875	190	1887	2,017	1899	2,374
1876	319	1888	1,997	1900	2,427
1877	500	1889	2,074	1901	2,414
1878	519	1890	2,392	1902	2,408
1879	642	1891	2,373	1903	2,677
1880	819	1892	2,331	1904	2,907
1881	892	1893	2,422	1905	2,918
1882	1,102	1894	2,801	1906	2,207
1883	1,373	1895	2,476	1907	2,366
1884	1,509	1896	2,596	1908	2,669
1885	1,794	1897	2,815		
1886	1,923	1898	2,355		

Summary.

	White.		Colored.		Total.
	Male.	Female.	Male.	Female.	
In hospital July 1, 1907	4	1	60	89	154
Admissions	149	18	1,064	1,203	2,434
Births			132	103	235
Total under care	153	19	1,256	1,395	2,823
Died					287
Discharged:					
Recovered					1,624
Improved					632
Unimproved					113
Not treated					36
Total died and discharged					2,629
In hospital July 1, 1908	2	1	52	76	131
Operations	66	4	588	447	1,005
Results of operations:					
Recovered					911
Improved					69
Unimproved					12
Died					13
Emergencies	103	9	540	166	818
Days' maintenance furnished District of Columbia patients					35,966
Days' maintenance furnished United States patients					18,738
Total days' maintenance					54,704
Smallest number of patients at any one time					114
Largest number of patients at any one time					169
Daily average number of patients					142
District patients					1,964
Nonresidence patients					859
Number treated in out-patient department	49	11	2,800	2,159	5,019

For the past three years Congress has appropriated $25,500 annually for the care and treatment of patients admitted to the hospital from the District of Columbia, to be expended under contract with the Board of Charities. This yearly appropriation has been insufficient to cover the bills rendered in accordance with the terms of the contract, the District being in arrears $32,379.10 at the beginning of the current fiscal year, as is shown by the following table:

Residents of the District of Columbia, admitted from July 1, 1905, to July 30, 1908.

Fiscal year.	Adults.	Children.	Babies.	Total.	Bills rendered.	Payment received.	Balance due.
1906	1,675	96	165	1,936	$38,223.75	$25,500.00	$12,723.75
1907	1,809	119	167	2,095	36,184.80	25,500.00	10,684.80
1908	1,661	119	184	1,964	34,470.55	25,500.00	8,970.55
Total	5,145	334	516	5,995	108,879.10	76,500.00	32,379.10

It is respectfully recommended that the Commissioners of the District of Columbia be requested to include in the District estimates for the fiscal year 1910 a sum sufficient to liquidate the present debt, and that their future estimates be based upon the actual number of patients admitted to the hospital.

TRAINING SCHOOL FOR NURSES.

The work in this department has been much above the average in former years. The process of eliminating those who lag so far behind as to interfere with the progress of the work and the selection of those possessing the necessary qualifications has added materially to the efficiency of this department. Appointments are limited to those possessing, in addition to the necessary physical qualifications, a liberal education.

This department of the hospital work could be greatly improved if a salaried dietitian, masseur, and eight graduated nurses, one for each ward, could be employed.

Estimates of salaries for these positions have been submitted to the department in the usual way, and it is hoped that the necessary appropriation can be secured at the next session of Congress.

At the commencement exercises, held May 20, at the Andrew Rankin Memorial Chapel the following were graduated:

Cornelia Kellas Briggs, New York.
Kate Esmynia Douglass, Rhode Island.
Vesta Lee Donaldson, Tennessee.
Jamima Smith Henderson, New York.
Kate Beatrice Murphy, District of Columbia.
Beatrice Eugenia Nicholas, Maryland.
Clara Skinner Denning, New York.
Ada Carolyn Douglass, Massachusetts.
Julia Fray, West Indies.
Bertia Lavenia Jones, Pennsylvania.
Eva May Proctor, New Jersey.
Alice Eloise Robinson, South Carolina.
Angus Reynolds, Ohio.

The usual course of lectures was delivered by the following staff:

W. A. Warfield, M. D.....Gynecology and Abdominal Nursing.
W. C. McNeill, M. D.....Bacteriology and Urinalysis.
Sarah L. Tuffs.....Practical and Theoretical Nursing.
H. W. Freeman, M. D.....Anatomy.
Albert Ridgley, M. D.....Physiology.
Wm. A. Jack, jr., M. D.....Surgery.
C. A. Brooks, M. D.....Materia Medica.
N. R. Jenner, M. D.....Obstetrics.
Jno. R. Francis, M. D.....Diseases of Children.
F. E. Maxcy, M. D.....Medical Nursing.
M. O. Dumas, M. D.....Diseases of Eye and Ear.
Anna Combs.....Massage.
Julia W. Shaw.....Dietetics.

Applications, withdrawals, dismissals, etc.

Applications received	146	Dismissed	4
Applicants taken on probation	23	Withdrawn	3
Accepted	16	Graduated	13

Occupation and residence of graduates.

1896.

Ashton, Luci V., private nurse, Kansas City, Mo.
Blackburn, N. L., private nurse, Philadelphia, Pa.
Burke, Julia (Mrs. Phillips), Jacksonville, Fla.

1896—Continued.

Fleetwood, Sara I., deceased, Washington, D. C.
Foust, Isabella L., private nurse, Winston, N. C.
Gibson, Katherine C., Bureau of Engraving and Printing, Washington, D. C.

Occupation and residence of graduates—Continued.

1896—Continued.

Green, Anna N., deceased.
Owens, Laura A., private nurse, Washington, D. C.
Pierce, Letitia (Mrs. Blair), Kansas City, Mo.
Ricks, Antoinette M. (Mrs. Demby), Kansas City, Mo.
Robinson, Annie B., superintendent and matron, Good Samaritan Hospital, Charlotte, N. C.
Shorter, Sarah A., private nurse, Washington, D. C.
Simms, Annie A. (Mrs. Johnson), Baltimore, Md.
Smith, Gertrude (Mrs. Thorn), Washington, D. C.
Tyler, Elizabeth, private nurse, Northampton, Mass.

1897.

Caldwell, Amanda J. (Mrs. Darrell), Dallas, Tex.
Combs, Annie, massage specialist, Washington, D. C.
Green, Lucille (Mrs. Tibbs), St. Paul, Minn.
Griffin, G. Josephine, private nurse, Washington, D. C.
Haithcock, Ada, private nurse, Washington, D. C.
King, Annie C. (Mrs. Hughes), Richmond, Va.
Rollins, Willie M. (Mrs. Frazier), Washington, D. C.
Smith, S. May, private nurse, Troy, N. Y.
Thomas, Annie M., private nurse, Washington, D. C.
Thompson, Della R. (Mrs. Davis), Vienna, Va.
Underhill, Katherine P. (Mrs. Wm. Moten), Washington, D. C.
Webb, Eva, private nurse, Washington, D. C.
Warner, Florence A., private nurse, Springfield, Mass.
Young, Lola E. M., private nurse, Greenville, S. C.

1898.

Bannister, Carrie J., private nurse, Washington, D. C.
Bennett, Florence R., private nurse, Baltimore, Md.
Cabannis, Martha E., head nurse, Richmond Hospital, Richmond, Va.
Carter, Edith M., private nurse, New Rochelle, N. Y.
Davis, Annie M., private nurse, Shelbyville, Tenn.
Ennis, Sarah J. (Mrs. Brooks), Washington, D. C.

1898—Continued.

Gaines, Mary R., private nurse, Oakland, Cal.
Geder, Isabella, private nurse, Binghamton, N. Y.
Hurlong, Mary A., private nurse, Asheville, N. C.
King, Carrie M. (Mrs. Foreman), Buffalo, N. Y.
Robinson, Amelia A., private nurse, Nashville, Tenn.
Russell, Ruby E., private nurse, Charlottesville, Va.
Stanton, Priscilla (Mrs. Todd), Pittsburg, Pa.
Sumby, Lillie May, private nurse, Washington, D. C.
Valentine, J. Ella, private nurse, Lebanon, Ind.
Whitson, Clara E. (Mrs. Howe), Washington, D. C.

1899.

Banks, Effie P. (Mrs. Sykes), Indianapolis, Ind.
Brown, Agnes M., private nurse, Meyersdale, Pa.
Coleman, Georgia A., private nurse, Washington, D. C.
Dismond, S. Matthew (Mrs. Dibble), St. Louis, Mo.
Francies, Bertha A., head nurse, Home Hospital, Birmingham, Ala.
Hairston, Lula C. (Mrs. Crews), Winston, N. C.
Hankins, Mintha C., private nurse, Washington, D. C.
Hendricks, Eliza R. (Mrs. Brown).
Henry, Lillian M., private nurse, Downingtown, Pa.
Hoge, Carrie M., private nurse, Washington, D. C.
Keemer, Jessie E. (Mrs. Robinson), Providence, R. I.
McEwen, Irene O. (Mrs. Green), Pensacola, Fla.
Rich, Anna, private nurse, Hartford, Conn.
Scott, Helen V. (Mrs. Cole), Swansboro, Ga.
Thompson, Isabella, private nurse, New Orleans, La.
Wilson, Emma C., private nurse, Montgomery, Ala.
Williams, Almira E., deceased.

1900.

Clarke, Mary F., private nurse, Richmond, Va.
Hamilton, Priscilla, deceased.
Hawkins, Nannie E., private nurse, Charlotte, N. C.

Occupation and residence of graduates—Continued.

1900—Continued.

Hunton, Mary A. (Mrs. Gordon), St. Louis, Mo.
Johnson, Hattie B., private nurse, Mount Pleasant, N. C.
Lewis, Eva P., private nurse, Manassas, Va.
Mickens, Macella C., private nurse, Pittsburg, Pa.
Middleton, Haga H., private nurse, Charleston, S. C.
Moody, Annie L., private nurse, Washington, D. C.
Smith, Cora V., private nurse, Camden, N. J.
Winfield, Laura, private nurse, Ware, Mass.

1901.

Allen, Margaret A., private nurse, Washington, D. C.
Barks, Susan C., private nurse, Washington, D. C.
Campbell, B. N., private nurse, Montgomery, Ala.
Dey, Mary L., private nurse, Philadelphia, Pa.
Hackley, Mamie E. (Mrs. Ash), Philadelphia, Pa.
Hanson, Carrie L., private nurse, Baltimore, Md.
Harrell, Catherine S. (Mrs. Butler), Texas.
Hunter, Bessie, private nurse, Washington, D. C.
Jackson, Eliza A., private nurse, Richmond, Va.
Jones, Mary J., matron, Freedmen's Hospital, Washington, D. C.
Powell, Gussie D., private nurse, Richmond, Va.
Rhone, Charlotte S., private nurse, Newbern, N. C.
Robinson, Frances A., private nurse, Newbern, N. C.
Thomas, Bertha J., private nurse, Washington, D. C.
Walcott, Louisa M., private nurse, Rockhill, S. C.
Whitley, Florence A., private nurse, Newbern, N. C.

1902.

Adams, Ella C., private nurse, Philadelphia, Pa.
Baker, Vera L., head nurse, State Hospital, Goldsboro, N. C.
Booth, Mary S., private nurse, Bath, Me.
Delisse, Augusta V., private nurse, Brooklyn, N. Y.
Dias, Frances C., private nurse, Philadelphia, Pa.
Johnson, Gertrude B., private nurse, Niagara Falls, N. Y.

1902—Continued.

Mason, Corinna (Mrs. Phillips), Springfield, Mass.
Nichols, Florence L., private nurse, Newark, N. J.
Rogers, Amanda, private nurse, Indianapolis, Ind.
Roper, Maggie A., private nurse, Galveston, Tex.
Thompson, Rachel A. (Mrs. Thomas), deceased.

1903.

Browne, E. M., head nurse, Douglass Hospital, Philadelphia, Pa.
Baltimore, Mary E., private nurse, Harrisburg, Pa.
Christie, Sarah E., private nurse, Chester, Pa.
Coates, Maiella E., private nurse, Washington, D. C.
Hargrave, L. S., private nurse, Trenton, N. J.
Johnson, L. D., private nurse, Warrenton, N. C.
Johnson, Nellie V., private nurse, Abbeville, S. C.
Latney, Carrie L. (Mrs. Bowie), Washington, D. C.
Love, Ellen V., private nurse, Lumberton, N. C.
Purcell, E. J., private nurse, Brunswick, Ga.
Rollins, Clara A., private nurse, Washington, D. C.
Rutherford, Anna L., private nurse, Kingston, N. C.
Sharp, Carrie M., private nurse, Marion, Va.
Valentine, J. L. (Mrs. Dial), Jacksonville, Fla.
Yarborough, S. V. S., private nurse, Columbus, Ga.

1904.

Baker, Hattie E., private nurse, Darlington, S. C.
Blackwell, W. Lucille (Mrs. Morris), New York, N. Y.
Carter, Mary E., private nurse, Rippon, W. Va.
Carter, Elizabeth V., head nurse, Mercy Hospital, Philadelphia, Pa.
Grant, Anna E., private nurse, Savannah, Ga.
Gilmore, Mary E., private nurse, Leavenworth, Kans.
James, Aleathia D., private nurse, Rochelle, Fla.
Jeffries, Emma M., private nurse, Redbank, N. J.

Occupation and residence of graduates—Continued.

1904—Continued.

Jones, Violet, private nurse, Hartford, Conn.
Lewis, Louzetta (Mrs. Mitchell), Montgomery, Ala.
Richardson, Effie V. (Mrs. McCoy), Washington, D. C.
Thomas, Marie E. (Mrs. Jones), Topeka, Kans.

1905.

Braxton, Margaret, private nurse, Hartford, Conn.
Brooks, Alpha E., private nurse, Institute, W. Va.
Carter, Marion M., private nurse, Washington, D. C.
Henderson, Hattie E., private nurse, Cleveland, Ohio.
Holmes, Julia E., private nurse, Plainfield, N. J.
Jefferson, Roxanna M., private nurse, Bristol, Tenn.
Kidd, Berta M. (Mrs. Harris), Washington, D. C.
Long, Ida E., private nurse, Newark, N. J.
Maston, Mary J., head nurse, Red Cross Sanitarium, Louisville, Ky.
Scott, Julia E., private nurse, New Haven, Conn.
Teabout, Stella, private nurse, Richfield Springs, N. Y.
Taliaferro, Olivia, private nurse, Anacostia, D. C.
Terry, Jessie C., private nurse, Los Angeles, Cal.
Williams, Daisy M. (Mrs. Moten), Sherman, Tex.
Williams, Mary T., private nurse, Ware Neck, Va.
Wilson, Annabel, private nurse, Baltimore, Md.

1906.

Barnes, Annie, private nurse, Baltimore, Md.
Bearce, Daisy M., private nurse, Rye, N. Y.

1906—Continued.

Burruss, Mary E. (Mrs. Wormley), Washington, D. C.
Gordon, Mary B., private nurse, Washington, D. C.
Hall, Iona M., private nurse, Troy, Ohio.
Henderson, Sara O., private nurse, Newport, R. I.
Johnson, Harriett C., private nurse, Cleveland, Ohio.
Lewis, Willie A., private nurse, Atlanta, Ga.
Lucas, Marion V., private nurse, Washington, D. C.
McDougal, Colota M., private nurse, Indianapolis, Ind.
McKnight, Viola, superintendent of nurses, State Hospital, Petersburg, Va.
Marshall, Mary E., private nurse, Morristown, Tenn.
Merritt, Mary E., superintendent of nurses, Mitchell Hospital, Leavenworth, Kans.

1907.

Bullock, Blanche V., private nurse, Richmond, Va.
Childs, Helen D., private nurse, Lakewood, N. J.
Escoffery, Lula M., private nurse, Atlantic City, N. J.
Harmon, Nannie M., private nurse, Tip Top, Va.
Porter, Susan H., private nurse, dean woman's department, Tuskegee, Ala.
Payton, Lillian M., operating nurse, Freedmen's Hospital.
Peck, Alice M., private nurse, Baltimore, Md.
Rose, Julia M., private nurse, Lynchburg, Va.
Slocum, Mary E., private nurse, Providence, R. I.
Smith, Minnie M., private nurse, Amherst, Mass.
Taylor, Loretta P., private nurse, Washington, D. C.
Wright, Nena J., private nurse, Washington, D. C.

The circular of information sent to applicants is reprinted below:

The Freedmen's Hospital Training School for Nurses is established to give a two years' course of training to women who desire to enter the profession of nursing.

Applicants may be received at any time during the year when there is a vacancy. Those wishing to obtain this course of instruction must apply to the surgeon in chief of the Freedmen's Hospital, and printed instructions will be furnished respecting the personal information to be given by applicants. Letters of application should be accompanied by a statement from a clergyman, testifying to good moral character, and from a physician, certifying to sound health and unimpaired faculties. Applicants must be between 21 and 35 years of age, of at least average height and physique, and must give satisfactory evidence of a general fitness of disposition and temperament

for the work of nursing. It has been the practice of the hospital to appoint only unmarried colored women (this term includes widows). Upon the recommendation of the superintendent of the nurses and the approval of the surgeon in chief they will be received one month on probation. During the month of trial and previous to being accepted as a pupil in the school the applicant must be prepared for an examination in reading, penmanship, simple arithmetic, and English dictation. The examination is to test the applicant's ability to read aloud well, to write legibly and accurately, to understand arithmetic as far as fractions and per cent, and take notes of lectures. This amount of education is indispensable for a member of the school, but applicants are reminded that women of superior education and cultivation will be preferred.

During the probationary month, board, lodging, and laundry work are provided by the school. The probationer provides her own dress.

The training school authorities reserve the right to terminate the connection of a pupil with the school at any time in case of misconduct, inefficiency, or neglect of duty. Those who prove satisfactory are accepted as pupils after signing a written agreement to remain at the school for two years, including the probationary month, and during that time to obey the rules of the school and hospital and to be subordinate to the authorities governing the same. Pupils reside at the home and serve as assistants in various departments of the hospital for the full two years. They are also expected to perform any duty assigned to them by the superintendent of nurses.

After the month of probation pupils are required, when on duty, to wear the dress prescribed by the hospital, which is a blue gingham, simply made, with white apron and cap and linen collar and cuffs. Probationers are not allowed to wear this dress.

In addition to their board and lodging and a reasonable amount of laundry work, the nurses will be provided with uniforms, the necessary note and text-books, also $5 per month. This sum is not given as pay for services rendered, it being considered that their education during that time is a full equivalent for their services.

The day nurses are on duty from 7.30 a. m. to 7.30 p. m., with an hour off for dinner and additional time for exercise or rest. The pupils have a right to one-half of Sunday and are often given a half day in the week. A vacation of two weeks is allowed each year during the summer. In sickness the pupils are cared for gratuitously, but the time lost must be made up.

The course of instruction is given by visiting and resident physicians and surgeons at the bedside of the patients and by the superintendent and head nurse. A regular course of lectures, recitations, and demonstrations is also given, with examinations at stated periods. When the full term of two years is ended, the nurses receive, if they pass the examination and are otherwise satisfactory, a diploma certifying to the course of training and practice.

COURSE OF TRAINING.

The instruction includes:

(1) The dressing of blisters, burns, sores, wounds; the application of fomentations, poultices, cups.

(2) The administration of enemas and use of catheter.

(3) The management of appliances for uterine complaints.

(4) The best method of friction to the body and extremities.

(5) The management of helpless patients; making beds, moving, changing, giving baths in bed, preventing and dressing bedsores, and managing positions.

(6) Bandaging, making bandages and rollers, lining of splints.

(7) The preparing, cooking, and serving of delicacies for the sick.

They will also be given instruction in the best practical methods of supplying fresh air, warming and ventilating sick rooms in the proper manner, and are taught to take care of rooms and wards, to keep all utensils perfectly clean and disinfected, to make accurate observations and reports to the physician of the state of the secretions, expectoration, pulse, skin, appetite, temperature of the body, intelligence as to delirium or stupor, breathing, sleep, condition of wounds, eruptions, formation of matter, effect of diet, or of stimulants, or of medicine, and to learn the management of convalescents.

The teaching will be given by visiting or resident physicians and surgeons at the bedside of the patients, and by the superintendent. Lectures, recitations, and demonstrations will take place from time to time, and examinations at stated periods.

When the full term of two years is ended, the nurses thus trained, on passing a satisfactory examination, each receive a diploma.

QUESTIONS TO BE ANSWERED BY CANDIDATES.

(1) Name in full.
(2) Are you a single woman or widow?
(3) If a widow, have you children; how many; their ages; how are they provided for?
(4) Are you otherwise free from domestic responsibility so that you are not liable to be called away during the two years' course?
(5) Your present occupation or employment.
(6) Your former employment, if any.
(7) Your age on last birthday.
(8) Date and place of birth.
(9) Height.
(10) Weight.
(11) In what schools and places were you educated? And state what your advantages have been.
(12) Have you ever been in any other hospital or training school?
(13) Are you strong and healthy, and have you always been so?
(14) Are your sight and hearing good?
(15) Have you any physical defects?
(16) Have you any tendency to pulmonary complaint?
(17) Have you ever had any uterine disease?
(18) The names in full of two persons to be referred to, not relatives; and state how long each has known you; if previously employed, one of these must be the last employer.
(19) Have you read and do you clearly understand the regulations?

CONTRACT SIGNED BY PUPIL NURSES ON ENTERING THE SCHOOL.

WASHINGTON, D. C.,———, 190—.

I, ——— ———, the undersigned, do hereby agree to remain two years from date a pupil of the above-named institution, and promise during that time to obey the rules of school and hospital and to be subordinate to the authorities governing the same.

RECOMMENDATIONS.

I desire to renew my recommendation of last year as regards pay patients. The demand for some provision for this class is constantly growing and for whose care and treatment Freedmen's Hospital is peculiarly suitable. Numbers of persons, whose presence in other hospitals is not wanted, would be welcomed here. They are able and willing to pay and I urge that some provision be made whereby this class of patients can receive treatment in this hospital.

The erection of a suitable building for the nurses' home I consider as the most pressing need at present. Until this building is erected the nurses will be compelled to occupy one of the wards of the hospital, thus limiting the space intended for patients.

A fence around the hospital grounds is much needed. These grounds, spacious and beautifully shaded, would be a valuable auxiliary to the work of the hospital if they could be inclosed and properly kept and if noisy persons who daily annoy patients and attendants could be excluded.

Another pressing need of this institution is the employment of a skilled anesthetist with a salary commensurate with the importance of the position. The giving of an anesthetic is second in importance only to the work of the surgeon and should be intrusted only to one thoroughly versed in this important work of the operating room.

The employment of an assistant engineer and an additional fireman is urgent and should not be delayed much longer. When the engineer goes off duty the plant is left in charge of a fireman, whose time is of

necessity divided between the boiler room and the hospital buildings, a practice which is regarded as unsafe and should not be allowed to exist, but can not be remedied until sufficient appropriation is had.

The following estimates of appropriation are urgently needed for the completion of the new hospital and accessories:

Nurses' home	$45,000.00
Grading	5,000.00
Fence	12,000.00
Total	52,000.00

Receipts and expenditures for the year.

Receipts:		
Appropriation, sundry civil bill—		
For support	$10,500.00	
Salaries	17,000.00	
Appropriation, District of Columbia appropriation bill (under contract with Board of Charities)	25,500.00	
		$53,000.00
Expenditures:		
Miscellaneous (fuel, light, clothing, forage, medicine, etc.)	16,119.33	
Subsistence	18,127.46	
Salaries	16,806.23	
		51,053.02

Very respectfully,

W. A. WARFIELD,
Surgeon in Chief.

The SECRETARY OF THE INTERIOR.

REPORT OF THE PRESIDENT OF HOWARD UNIVERSITY.

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Mr. JOHN F. COOK.
Hon. HENRY M. BAKER.
Mr. WILLIAM V. COX.
Mr. CUNO H. RUDOLPH.
Dr. J. H. N. WARING.
Judge GEORGE W. ATKINSON.

HEADS OF DEPARTMENTS.

The College of Arts and Sciences: KELLY MILLER, A. M., *Dean.*
The Teachers' College: LEWIS B. MOORE, A. M., Ph. D., *Dean.*
The School of Theology: ISAAC CLARK, A. M., D. D., *Dean.*
The School of Medicine: ROBERT REYBURN, A. M., M. D., *Dean.*
The School of Law: BENJAMIN F. LEIGHTON, LL. D., *Dean.*
The Commercial College: GEORGE W. COOK, A. M., LL. M., *Dean.*
The Academy: GEORGE J. CUMMINGS, A. M., *Dean.*
The School of Manual Arts and Applied Sciences: WALTER S. GRAFFAM, B. S., *Director.*

* Deceased.

REPORT OF THE PRESIDENT OF HOWARD UNIVERSITY.

HOWARD UNIVERSITY,
Washington, D. C., July 15, 1908.

SIR: I have the honor to submit for Howard University the following report, showing "the condition of the institution on the 1st day of July, embracing therein the number of pupils received and discharged or leaving the same for any cause during the year and the number remaining; also the branches of knowledge and industry taught, and the progress made therein." The report of the treasurer attached shows "the receipts of the institution and from what sources, and its disbursements and for what objects."

The students, 1,091 in number, were from 34 States and Territories, from Porto Rico 4, and from the following foreign countries: Africa, 4; British West Indies, 60; Canada, 1; Republic of Panama, 1; South America, 7, and from Santo Domingo, Haiti, West Indies, and India each 1.

Of these 128 graduated as per statement under each department.

Howard University was founded in 1867 under the Freedmen's Bureau. The original farm purchased for the site, together with the buildings, is now surrounded by the city, and the grounds and buildings of the university are valued at over $1,000,000. The university has sent out over 2,500 graduates from the several departments, who have made an honorable record for usefulness and large service among their people. The enrollment for the current year is 1,091 students. The national character of the institution may be judged from the fact that these students come from 34 States and 76 from 8 foreign countries. Howard University is the only institution where the nation directly touches the education of the negro. While millions of dollars have been appropriated for the education of Indians and the Eskimos of Alaska the appropriations to this university have been comparatively small, although it has to do with the uplifting of ten millions of negroes on whom have been placed the duties and responsibilities of citizenship. While some state institutions for negroes are maintained in the South yet the appropriations for the same are generally limited and mostly from the Morrill fund. Hence the importance of this institution that provides for the training of the teachers, physicians, the intellectual and moral and industrial leaders and helpers of a race.

For convenience I render a detailed report by departments.

SCHOOL OF MEDICINE.

The school of medicine was chartered by act of Congress March 2, 1867. It includes the medical, dental, and pharmaceutic colleges, and, in conformity with the spirit of the organic law of the university, is open to all persons without regard to sex or race who are qualified

by good moral character, age, and required preparation. The courses have been lengthened to four years and the sessions now extend from October 1 to June. The courses of study cover the following subjects: Anatomy, physiology, histology, materia medica, therapeutics, electro-therapeutics, general chemistry, organic chemistry, toxicology, obstetrics, embryology, practice of medicine, surgery, minor surgery, hygiene, pathology, bacteriology, gynecology, pediatrics, ophthalmology, otology, dermatology, laryngology, rhinology, physical diagnosis, and medical jurisprudence. The curriculum in the dental college comprises anatomy, physiology, histology, materia medica, therapeutics, chemistry, toxicology, metallurgy, oral surgery, operative and prosthetic dentistry, dental technic, pathology, bacteriology, hygiene, and medical jurisprudence. The curriculum in pharmacy comprises chemistry, toxicology, botany, materia medica, therapeutics, pharmacy, microscopy, bacteriology, urinalysis, and physiology.

The completion of the new Freedmen's Hospital, which is built on an adjoining park of 11 acres, ceded to the Government by the university for this purpose, will give to the school of medicine exceptionally fine clinical advantages.

Students in attendance in the school of medicine.

Seniors	28	Special students—Continued.	
Juniors	34	Bacteriology and chemistry	2
Sophomores	55	Bacteriology and pathology	1
Freshmen	54	Chemistry, histology, materia medica, physiology, and physiological laboratory	2
Senior dental	6	Physiology	3
Middle dental	21	Pharmacy	3
First year dental	30	Evening students:	
Senior pharmaceutic	9	Medical	14
Middle year pharmaceutic	17	Dental	7
First year pharmaceutic	20	Post graduates	22
Special students:			
Anatomy, materia medica, physiology, and physiological laboratory	4	Total	332

Of these, 24 received the degree of M. D., 5 received the degree of D. D. S., and 8 received the degree of Phar. D.

SCHOOL OF LAW.

The branches taught are the same as those of other law schools in the city of Washington, as follows:

FIRST YEAR.

Blackstone's Commentaries; Tiedeman on Real Property, as far as the chapter on Trusts; Darlington's Personal Property; Lawson on Contracts, enlarged edition: Daniel and Douglass's Elements of the Law of Negotiable Instruments; American Cases on Contracts, by Huffcutt and Woodruff, and Schouler on Domestic Relations; Hale on Torts; Clark on Criminal Law.

MIDDLE YEAR.

Andrew Stephen's Pleading; Adams on Equity; Shepard's Selected Cases in Equity; Clark's Criminal Procedure; Greenleaf's Evidence,

volume 1; Tiedeman on Real Property, commencing with the chapter on Trusts; Wambaugh's Study of Cases.

SENIOR YEAR.

Cooley's Principles of Constitutional Law; Boyd's Constitutional Law Cases; Bateman's Mercantile Law; Clark on Corporations; Burdick on Partnerships; Burdick on Sales; Elliott on Insurance; Greenleaf on Evidence, volumes 2 and 3; Schouler's Executors and Administrators; Woolsey on International Law.

Students in attendance in the school of law.

Seniors	27
Middlers	20
Juniors	45
Specials	5
Total	97

Of these 25 received the degree of bachelor of laws.

SCHOOL OF THEOLOGY.

The school of theology, which is not supported in any degree by Congress, requires no doctrinal tests, is interdenominational, and welcomes the patronage of all who are preparing for moral and religious work, makes the following report:

The branches taught are the Scriptures in the original, the English Bible, biblical history and antiquities, systematic theology, church history, homiletics, Christian missions, pastoral theology, moral philosophy, natural theology, evidences of Christianity, elocution, rhetoric, and vocal music.

There are three courses—a classical and an English day course and a night English course. Only those in the classical course study the Scriptures in the original.

Various denominations are represented among the teachers and students, and all work in harmony. Three teachers give all their time to the work, and two part time.

Students in attendance in the school of theology.

Seniors	8
Middlers	12
Juniors	12
Specials	19
	51
Evening institute:	
Fourth year	4
Third year	12
Second year	12
First year	19
	47
Total	98

Of these 5 received the degree of bachelor of divinity, and 12 received certificates.

COLLEGE OF ARTS AND SCIENCES.

The students are classified, as in other American colleges, into seniors, juniors, sophomores, and freshmen.

The subjects taught are as follows: Algebra, geometry, trigonometry, analytics, calculus, astronomy, physics, chemistry, geology, zoology, botany, mineralogy, biology, logic, rhetoric, history, English literature, Greek, Latin, French, German, psychology, moral philosophy, political science, international law, political economy, sociology, pedagogy, theism, modern philosophy, history of education, and Bible study. The Bible is studied as literature, and the great ethical principles that form the basis of social and moral life are enforced.

Students in attenadnce in the department of college of arts and sciences.

Seniors	18
Juniors	15
Sophomores	24
Freshmen	44
Special students	5
Total	106

Of these 16 received the degree of A. B.

TEACHERS' COLLEGE.

This college is the department of pedagogy for the study of educational science and the training of teachers. The purpose of the department is to afford opportunity, both theoretical and practical, for the training of teachers of both sexes for elementary and secondary schools, and by instruction and direction to help those who desire to pursue studies and investigations in the science of education.

The work aims (1) to acquaint the students with those principles and practices of education which have changed the methods of secular schools and established them upon a psychological basis; (2) to lay broad culture in the student himself, and (3) to create a spirit of enthusiastic devotion to the highest of all work—the instruction of a little child.

The practice school is the laboratory of the department. Members of the senior class give instruction here one year as a part of their required training.

The following subjects are taught: Teachers' course in English, physiology, zoology, physiography, physics, nature study, history, gymnastics, Bible, elocution, psychology (elementary and descriptive), history of pedagogy, history of philosophy, ethics, philosophy of education, methods of teaching, and kindergarten methods.

The junior class has enjoyed a course in general culture, including reviews of popular works and discussions of current topics.

Students in attendance in the teachers' college.

Seniors	12
Juniors	20
Sophomores	5
Freshmen	6
Special students	24
Elementary school	49
Total	116

Of these, 3 received the degree of A. B., 4 received the degree of Ph. B., and 7 received diplomas of graduation.

DEPARTMENT OF MANUAL ARTS.

The department of manual arts is closely affiliated with the teachers' college and the academy, in order to serve the double purpose of giving instruction in the manual arts, and also of training teachers competent to teach manual training in the graded and secondary schools. The demand for teachers who can give instruction in manual training in addition to an academic subject is frequent and urgent, and the trustees felt that by a proper correlation of the industrial and academic work they could make this department of the university of much more value to the people whom Howard University must elevate.

The subjects taught are free-hand and mechanical drawing, woodwork, sheet-metal work, printing, sewing, weaving, basketry, garment making, millinery, and cookery.

The courses are open to all departments of the university, and enrolled students as follows:

Printing office	64
Domestic science (cookery)	53
Carpentry	81
Drawing	60
Sewing, weaving, basketry	54
Total	312

COMMERCIAL COLLEGE.

This department gives a business course and English high-school education combined. It offers courses in bookkeeping, commercial law, history, civics, etc. Special emphasis is placed on reading and spelling, grammar, and arithmetic, as will appear below. The fourth-year class is the highest in the grade of study. The department maintains special classes in typewriting, shorthand, and English grammar. All students in the first-year class are required to spend four hours a week in the industrial department. The instruction is designed to fit pupils for intelligent citizenship and practical business.

The following branches are taught in the various classes: Higher English, mathematics, stenography and typewriting, physics, bookkeeping, political economy, civics, commercial law, commercial geography, sociology, zoology, physiology, statistics, and history of commerce.

Students in attendance in the commercial college.

Second-year class	11
Third-year class	9
Fourth-year class	2
Special students	21
Total	43

ACADEMY (PREPARATORY DEPARTMENT).

The academy furnishes a broad and thorough preparatory course, fitting for the college, such as is offered in the best academies of the country. The course covers four years of study.

In the senior year the following subjects are offered: The English classics, mathematics, Latin, Greek, German or French, the Bible as literature, essays, and discussions during the year.

In the middle year the following subjects are taught: Physics, chemistry, algebra, English classics, essays, Latin, Greek, French or German.

In the submiddle class the subjects taught are: English history, English classics, physical geography, geometry, French or German, the Bible, and manual training, such as carpentry, printing, etc.

In the junior year the subjects taught are: English composition, elementary rhetoric, ancient history, introductory Latin, the Bible, music, drawing, physiology, and manual training four hours a week.

Students in attendance in academy.

Seniors	21
Middlers	34
Submiddlers	71
Juniors	153
Special students	18
Total	297

Of these, 19 received certificates of graduation.

Respectfully submitted.

WILBUR P. THIRKIELD, *President.*

The SECRETARY OF THE INTERIOR.

APPENDIX.

The appropriation bill requires the proper officer of the university to report how the appropriation is expended, and in compliance with this requirement I have the honor to add the following statement:

Expenditure of appropriation.

Two heads of the college of arts and sciences and the academy, at $1,600 each	$3,200
Four professors of the college of arts and sciences, at $1,500 each	6,000
One associate professor	1,000
One professor of the college of arts and sciences	750
One instructor of the college of arts and sciences	1,250
One professor of the college of arts and sciences	1,200
One assistant to a professor of the college of arts and sciences	72
One head of the teachers' college	2,000
One supervisor of the practice school	1,000
Two instructors of the teachers' college, $700 and $850 each	1,550
Two instructors of the teachers' college, $800 and $650 each	1,450
One instructor of the academy	500
One instructor and one professor of the academy, $1,000 each	2,000
Two instructors of the academy, $450 and $400	850
One dean of the commercial college	300
One instructor of the commercial college	500
Two instructors of the commercial college, $600 and $700	1,300
One director of music	800
One assistant to the director of music	300
One librarian and one matron, $600 and $500	1,100
One secretary, treasurer, and business manager	2,078
One president	3,600
Total, instructors in academic branches	32,800
One dean and professor in the school of law	1,500
Two professors in the school of law, at $1,500 each	3,000
One professor and librarian in the same	1,400
Two lecturers, at $500 each	1,000
One lecturer	300
	7,200

The sum of $8,000, appropriated for the manual training (industrial) department, was expended as follows:

Expenditure of appropriation for manual-training department.

For director and instructors in woodworking, mechanical drawing, printing, domestic science, and domestic art	$6,300
For janitor and fireman	140
For gas, fuel, electricity, equipment, and material for the manual-training department, printing office, sewing, millinery, dressmaking, and cooking classes	1,400
	7,840
Unexpended balance provided for, but carried over to year 1908-9	160
	8,000

The university has already expended or has contracted for during the year about $8,500 for care of buildings and grounds, of which $7,000 was appropriated by Congress. The appropriation of $1,500 for the law and general library was expended or contracted for under the direction of the library committee, about $350 going to the law department library and the balance going to the general library. The books were purchased from the lowest bidder in each case. The bids were all submitted to the Secretary of the Interior and the purchases made by his authority. The sum of $200, appropriated for chemical apparatus, was used by the professors of chemistry, physics, and natural history after submission of proposals to the Secretary of the Interior. The sum of $3,069.96 was spent for fuel and lighting for the various buildings, of which $3,000 was appropriated by Congress.

ACCOUNT PERTAINING TO CURRENT EXPENSES OF ACADEMIC BRANCHES, OFFICERS, AND PROFESSORS.

Treasurer's statement of receipts and disbursements from July 1, 1907, to June 30, 1908.

RECEIPTS.

Balance on hand July 1, 1907	$47.30
From United States for—	
Salaries	32,800.00
Chemical apparatus	200.00
Law and general library	1,500.00
Buildings and grounds	7,000.00
Fuel	3,000.00
From rents	1,036.25
From income from investments	7,982.23
From students' rooms	4,823.27
From incidental fees	4,682.59
From bookstore	240.92
From insurance loan	3,159.51
From loan as per authority of board of trustees, January 21, 1908	5,900.00
From miscellaneous	1,183.31
	73,555.38

EXPENSES.

Salaries	33,613.50
Chemical apparatus	200.00
Law and general library	855.93
Buildings and grounds	5,745.10
Fuel and light	3,069.96
Repairs of buildings	1,056.69
Care of grounds	444.84
Gas and electricity	1,029.53
Janitors, firemen, and watchmen	2,501.26
Insurance	3,225.25
Miscellaneous and incidentals	8,470.70
Interest on $15,000 to school of medicine	750.00
Bookstore	240.98
Account insurance loan	631.90
Loans of 1906 and 1907	8,400.00
Transfer to school of medicine	1,050.00
Balance June 30, 1908	2,269.74
	73,555.38

School of theology:		
By balance on hand July 1, 1907		$15.68
By amount from A. M. A. trustees—		
Stone fund	$1,750.00	
Theological fund	1,050.00	
		2,800.00
By collection incidental fees, night class		469.50
By collection registration fees, day class		100.00
By transfer from donation account		125.00
To amount paid theological professors	3,435.00	
To refund of fees	11.00	
To advertising and supplies	57.90	
To balance June 30, 1908	6.28	
	3,510.18	3,510.18
School of medicine:		
By balance on hand July 1, 1907		148.36
By cash F. J. Shadd, treasurer		15,400.00
By cash William C. McNeill, assistant to treasurer		5,514.00
By registration fees		495.00
By interest on $15,000		750.00
By transfer from current expense account		1,050.00
By amount J. H. Purdy, balance pharmacy laboratory fees		82.59
To professors, lecturers, and janitors	18,892.00	
To gas and electric lighting bills, apparatus, miscellaneous supplies, advertising, catalogues, laboratory supplies, telephone	4,259.40	
To refund of registration fees	35.00	
To balance June 30, 1908	253.55	
	23,439.95	23,439.95
School of medicine building fund:		
By balance on hand July 1, 1907		50.00
To balance June 30, 1908	50.00	
	50.00	50.00
School of law:		
By balance on hand July 1, 1907		98.08
By cash, James F. Bundy, secretary and treasurer		1,993.75
By United States for salaries		7,200.00
To salaries of professors and lecturers	7,200.00	
To fuel, water rent, gas, miscellaneous and office supplies, printing, etc	431.38	
To salaries of secretary and treasurer, assistant librarian, and janitor	400.00	
To balance June 30, 1908	1,260.45	
	9,291.83	9,291.83
Department of manual arts and applied science:		
By balance on hand July 1, 1907		559.74
By United States appropriation "Industrial Department"		8,000.00
By fees from students		311.78
By cash for miscellaneous printing and University Journal		548.60
To salaries of director, instructors, and janitor	6,440.00	
To miscellaneous supplies, equipment, gas, electricity, supplies for classes in domestic science, domestic art, printing office, lumber, and hardware	2,274.95	
To stationery, supplies, and labor, printing office	456.34	
To balance June 30, 1908	248.83	
	9,420.12	9,420.12

General endowment fund:		
By balance on hand July 1, 1907		$618.33
By loans paid		10,500.00
By refund special assessments		613.14
By insurance account fire Freedmen's Hospital		2,085.74
To amount invested in real estate notes	$10,000.00	
To special assessments	1,586.01	
To notary and appraiser account fire Freedmen's Hospital	44.75	
To balance June 30, 1908	2,186.45	
	13,817.21	13,817.21
Frederick Douglass scholarship fund:		
By loans paid		1,400.00
By interest		231.08
To amount invested in real estate notes	1,400.00	
To amount transferred to aid fund	231.08	
	1,631.08	1,631.08
J. K. McLean scholarship fund:		
By loans paid		1,000.00
By interest		66.00
To amount invested in real estate notes	1,000.00	
To amount transferred to aid fund	66.00	
	1,066.00	1,066.00
The W. W. Patton memorial fund:		
By interest		.60
To amount transferred to aid fund	.30	
To balance June 30, 1908	.30	
	.60	.60
The Mary B. Patton scholarship fund:		
By interest		60.00
To amount transferred to aid fund	60.00	
	60.00	60.00
The Wm. W. Patton scholarship fund:		
By interest		50.00
To amount transferred to aid fund	50.00	
	50.00	50.00
The F. B. Schoals scholarship fund:		
By loans paid		500.00
By interest		306.74
To amount invested in real estate notes	500.00	
To amount transferred to aid fund	306.74	
	806.74	806.74
The Horace Ford scholarship fund:		
By interest		50.00
To amount transferred to aid fund	50.00	
	50.00	50.00
The J. W. Alvord scholarship fund:		
By interest		50.00
To amount transferred to aid fund	50.00	
	50.00	50.00

The Orange Valley scholarship fund:		
By interest		$50.00
To amount transferred to aid fund	$50.00	
	50.00	50.00
The J. P. Thompson scholarship fund:		
By loans paid		60.00
By interest		13.60
To amount invested in real estate notes	$60.00	
To amount transferred to aid fund	13.60	
	73.60	73.60
The Wm. E. Dodge scholarship fund:		
By loans paid		500.00
By interest		169.72
To amount invested in real estate notes	$500.00	
To amount transferred to aid fund	169.72	
	669.72	669.72
The Edward Smith text-book fund:		
By balance on July 1, 1907		18.28
By interest		25.00
To amount expended for books for students	$7.44	
To balance June 30, 1908	35.84	
	43.28	43.28
The Hartford reading-room fund:		
By balance on hand July 1, 1907		1.79
By interest		20.00
To amount expended for supplies for library	$21.56	
To balance June 30, 1908	.23	
	21.79	21.79
Students' aid fund:		
By balance on hand July 1, 1907		1,131.07
By amount transferred from specific funds		1,638.44
By amount account loan to student		1.27
To amount paid students	$1,781.93	
To balance June 30, 1908	988.85	
	2,770.78	2,770.78
School of medicine student-aid fund:		
By cash F. J. Shadd, treasurer		689.75
To balance June 30, 1908	$689.75	
	689.75	689.75
Andrew Rankin Memorial Chapel fund:		
By transfer from donation account		150.00
To interest on loan of November, 1894	$150.00	
	150.00	150.00
Deposit account:		
By balance on hand July 1, 1907		314.38
By amount received from students for safe-keeping		1,687.97
By amount received from students for keys		237.00
By amount received from chapel collections		199.13
By amount received for laboratory fees		245.75
By amount received from librarian, fines		18.24

Deposit account—Continued.		
To amount paid students	$1,818.25	
To amount paid students for keys returned	205.00	
To amount paid for laboratory supplies	216.22	
To amount paid for library supplies, account fines	14.79	
To amount paid account chapel collections	183.06	
To balance June 30, 1908	263.15	
	2,700.47	$2,700.47
Alumni professorship fund:		
By balance on hand July 1, 1907		5.64
By interest		1.26
To balance June 30, 1908	$6.90	
	6.90	6.90
School of theology alumni fund:		
By balance on hand July 1, 1907		2.40
By interest		2.40
To amount paid theological student	$4.80	
	4.80	4.80
Boarding hall account:		
By balance on hand July 1, 1907		141.58
By cash received for board		8,771.28
To amount paid for bills	$8,869.80	
To balance June 30, 1908	42.97	
	8,912.86	8,912.86
Thomas Cropper Riley scholarship fund:		
By interest		50.00
To amount transferred to aid fund	$50.00	
	50.00	50.00
Thad Stevens fund:		
By interest		117.50
To amount transferred to aid fund	$35.00	
To balance June 30, 1908	82.50	
	117.50	117.50
Caroline Patton Hatch fund:		
By interest		11.00
To amount transferred to aid fund	$11.00	
	11.00	11.00
Pomeroy scholarship fund:		
By balance on hand July 1, 1907		81.94
By loans paid		1,000.00
By interest		135.00
To amount invested in real estate notes	$1,000.00	
To amount transferred to aid fund	125.00	
To balance June 30, 1908	91.94	
	1,216.94	1,216.94
Agricultural and industrial training:		
By balance on hand July 1, 1907		16.95
To balance June 30, 1908	16.95	
	16.95	16.95

Martha Spaulding scholarship fund:		
By interest		$370.00
To amount transferred to aid fund	$370.00	
	370.00	370.00
Donation account:		
By donations		399.98
To amount transferred to chapel fund	$150.00	
To amount transferred to theological department	125.00	
To amount transferred to deposit account	25.00	
To balance June 30, 1908	99.98	
	399.98	399.98
Library fund:		
By donations		625.00
To balance June 30, 1908	$625.00	
	625.00	625.00
Summer school:		
By balance on hand July 1, 1907		74.80
To balance June 30, 1908	$74.80	
	74.80	74.80

List of permanent funds.

Name of fund.	June 30, 1908.		Total.
	Cash invested.	Cash on hand.	
General endowment fund	$137,402.40	$2,186.45	$139,588.85
Martha Spaulding scholarship fund	7,000.00	.....	7,000.00
Douglass scholarship fund	4,430.50	.....	4,430.50
McLean scholarship fund	1,000.00	.....	1,000.00
W. W. Patton memorial fund	12.10	.....	12.10
W. W. Patton scholarship fund	1,000.00	.....	1,000.00
M. B. Patton scholarship fund	1,200.00	.....	1,200.00
Horace Ford scholarship fund	1,000.00	.....	1,000.00
J. W. Alvord scholarship fund	1,000.00	.....	1,000.00
Orange Valley scholarship fund	1,000.00	.....	1,000.00
F. B. Schoals scholarship fund	6,000.00	.....	6,000.00
J. P. Thompson scholarship fund	260.00	.....	260.00
Wm. E. Dodge scholarship fund	5,000.00	.....	5,000.00
Thos. Cropper Riley scholarship fund	1,000.00	.....	1,000.00
Edward Smith text-book fund	500.00	.....	500.00
Hartford reading-room fund	400.00	.....	400.00
Thad. Stevens fund	2,200.00	.....	2,200.00
Caroline Patton Hatch fund	200.00	.....	200.00
Alumni professorship fund	25.00	.....	25.00
Theological alumni fund	40.00	.....	40.00
Pomeroy scholarship fund	2,500.00	.....	2,500.00
Total	173,170.00	2,186.45	175,356.45

Recapitulation.

Account.	Balance on hand July 1, 1907.	Received.	Disbursed.	Balance on hand June 30, 1908.
Amount pertaining to current expenses of academic branches, officers and professors	$47.30	$73,508.08	$71,285.64	$2,269.74
Library fund	.....	625.00	.....	625.00
School of medicine student aid fund	.....	689.75	.....	689.75
School of medicine	148.36	23,291.59	23,186.40	253.55
Medical department building fund	50.00	.....	.....	50.00
School of law	98.08	9,193.75	8,031.38	1,260.45
School of theology	15.68	3,494.50	3,503.90	6.28
Department of manual arts and applied science	559.74	8,860.38	9,171.29	248.83
Summer school	74.80	.....	.....	74.80
Donations	.....	399.98	300.00	99.98
Board	141.58	8,771.28	8,869.89	42.97
General endowment fund	618.33	13,198.88	11,630.76	2,186.45
Students' aid fund	1,131.07	1,639.71	1,781.93	988.85
Deposits	314.38	2,386.09	2,437.32	263.15
F. Douglass scholarship fund, principal	.....	1,400.00	1,400.00	.....
F. Douglass scholarship fund, interest	.....	231.08	231.08	.....
J. K. McLean scholarship fund, principal	.....	1,000.00	1,000.00	.....
J. K. McLean scholarship fund, interest	.....	66.00	66.00	.....
Wm. W. Patton memorial fund, interest	.....	.60	.30	.30
Wm. W. Patton scholarship fund, interest	.....	50.00	50.00	.....
Mary B. Patton scholarship fund, interest	.....	60.00	60.00	.....
F. B. Schoals scholarship fund, principal	.....	500.00	500.00	.....
F. B. Schoals scholarship fund, interest	.....	306.74	306.74	.....
Horace Ford scholarship fund, interest	.....	50.00	50.00	.....
J. W. Alvord scholarship fund, interest	.....	50.00	50.00	.....
Orange Valley scholarship fund, interest	.....	50.00	50.00	.....
Thad Stevens fund, interest	.....	117.50	35.00	82.50
J. P. Thompson fund, principal	.....	60.00	60.00	.....
J. P. Thompson fund, interest	.....	13.60	13.60	.....
Wm. E. Dodge fund, principal	.....	500.00	500.00	.....
Wm. E. Dodge fund, interest	.....	169.72	169.72	.....
Smith textbook fund, interest	18.28	25.00	7 44	35.84
Reading room fund, interest	1.79	20.00	21.56	.23
Thos. Cropper Riley fund, interest	.....	50.00	50.00	.....
Andrew E. Rankin chapel fund	.....	150.00	150.00	.....
Caroline P. Hatch fund, interest	.....	11.00	11.00	.....
Martha Spaulding fund, interest	.....	370.00	370.00	.....
Pomeroy scholarship fund, principal	.....	1,000.00	1,000.00	.....
Pomeroy scholarship fund, interest	81.94	135.00	125.00	91.94
Alumni professorship fund, interest	5.64	1.26	.....	6.90
School of Theology alumni fund, principal	.....	40.00	40.00	.....
School of Theology alumni fund, interest	2.40	2.40	4.80	.....
Agricultural and industrial training	16.95	.....	.....	16.95
Total	3,326.32	152,488.89	146,520.75	9,294.46

REPORT OF THE SUPERINTENDENT OF THE UNITED STATES CAPITOL BUILDING AND GROUNDS.

REPORT OF THE SUPERINTENDENT OF THE UNITED STATES CAPITOL BUILDING AND GROUNDS.

OFFICE OF THE SUPERINTENDENT,
UNITED STATES CAPITOL BUILDING AND GROUNDS,
Washington, D. C., July 1, 1908.

SIR: I have the honor to report the following improvements, alterations, and repairs at the Capitol and other buildings, under the supervision of this office, during the fiscal year ended June 30, 1908:

THE CAPITOL.

The removal of a number of important committees from the Capitol to the new Office Building for the House of Representatives made necessary much additional work, including cutting new doorways, painting, decorating, and plumbing, by which the committees remaining in the Capitol building have been supplied with more space.

Annually a large amount of painting and decoration is done in the Capitol building, and the past year has been no exception. The following rooms were painted, some being decorated also:

Senate wing: Rooms of committees on Claims, Census, Foreign Relations, Conference, Interstate Commerce, Post-Offices and Post-Roads, and Enrolled Bills, also the Vice-President's room, Sergeant-at-Arms' office, and the various corridors.

House wing: Rooms of committees on Private Land Claims, Indian Affairs, Elections No. 1, Labor, Expenditures in the Treasury Department, Foreign Affairs, Public Lands, Ways and Means, Appropriations, Banking and Currency, Commerce, Railroads and Canals, Invalid Pensions, Judiciary, Elections No. 2, and Library.

In addition to the foregoing, there has been painted and decorated: The press gallery, document room, Senators' toilet and restaurant, Senate wing; and the folding room, file room, Members' toilet, and corridors in the House wing. The robing room of the Supreme Court has been painted and decorated.

Eight modern toilets and four urinals have been installed in the House wing, and two toilets in the central portion of the building.

Ten additional sets of revolving doors have been placed at the entrances of the Senate and House wings, which with those formerly installed, completes the installation for all the outside entrances to the Capitol building.

The pediments over the east fronts of the Senate and House wings of the building have been fireproofed about the adjacent chimney flues, and additions to the auxiliary draft over the Statuary Hall made.

An additional fan and motor of 12 horsepower for ventilation has been installed over the attic of the Senate chamber.

Necessary repairs to the plumbing, windows, floors, and roofs of the building have been made.

In several of the important rooms of the Senate and House electric chandeliers have been installed.

The usual annual repairs to the lighting, heating, and ventilating machinery, have been made, and the several departments have been operated without interruption.

The total number of items in the foregoing repair work during the past year amounted to 1,223, of which number 84 were important and 1,139 of a minor character.

CAPITOL GROUNDS.

It was found necessary to replace 815 feet of old and worn-out water pipe, with new 3-inch galvanized pipe. The lawns about the Capitol have been satisfactorily cared for, and together with the trees and shrubs show a healthy and substantial improvement. Necessary repairs to the walks and driveways have been made.

ENGINE HOUSE, SENATE AND HOUSE STABLES.

The interior and exterior of the engine house were painted. The stalls reconstructed, and the front door enlarged. A considerable number of repairs to floors, stalls and plumbing were made at the Senate and House stables.

COURT-HOUSE, DISTRICT OF COLUMBIA.

The most important item of improvement at the court-house has been the installation of two electric passenger elevators. This work necessitated the changing of a number of water, steam, and sewer pipes. Several of the court and other rooms were painted. Partitions were erected in two rooms assigned to the judges. Repairs to floors, windows, and heating plant were made, and a large amount of electric wiring for lighting and for elevator service was installed.

BOTANIC GARDEN.

At the Botanic Garden, a large greenhouse 200 feet long was built, and the several other greenhouses and the heating plant and walks received needed repairs.

EXPENDITURES.

The expenditures for the fiscal year ended June 30, 1908, were as follows:

Expenditures for fiscal year ended June 30, 1908.

CAPITOL BUILDING AND REPAIRS.

Pay rolls	$8,670.43
Labor by voucher	5.50
Machinery and ironwork	626.80
Brushes, sponges, and soap	245.47
Carpenter and mill work and lumber	2,840.58
Hardware	956.28
Lime, brick, and sand	69.70
Paint, oil, and glass	3,318.70

Concrete, stone, and marble work	$746.73
Electric wiring, etc	153.25
Drawing and blueprint materials	15.18
Office vehicle	29.30
Hauling, telegrams, and expressage	59.19
Plumbing and plumbing material	3,536.25
Elevators and repairs	1,678.08
Roofing and tin work	729.28
Painting, decorating, and plastering	8,293.15
Tile and tiling	71.50
Bronze work	587.40
Stationery and books	64.13
Repairs to heating and ventilation	1,106.27
Flags	59.50
Repairs to ranges, stoves, etc	339.61
Skylights	706.50
Miscellaneous	3.90
Reserved for unpaid bills	87.32
Total	35,000.00
Amount appropriated, sundry civil bill approved March 4, 1907	30,000.00
Appropriated, urgent deficiency bill approved February 15, 1908	5,000.00
	35,000.00

IMPROVING THE CAPITOL GROUNDS.

Labor	$17,750.61
Plants and seeds	401.94
Fertilizers	883.15
Tools and machinery	1,691.68
Brushes, brooms, etc	347.25
Fuel	68.82
Plumbing materials	1,418.14
Hardware	18.51
Paving and repairs	1,179.43
Freight and expressage	6.65
Hose and couplings	226.15
Lumber	14.16
Miscellaneous	107.20
Painting	175.00
Stationery	5.85
Removing snow, etc	705.46
Total	25,000.00
Amount appropriated, sundry civil bill approved March 4, 1907	25,000.00

LIGHTING CAPITOL AND GROUNDS.

Pay rolls	$20,118.41
Incandescent and arc lamps	2,866.21
Wiremen, wire, and material	8,982.09
Fixtures	1,301.00
Machinery, iron and metal work	2,897.98
Tools, etc	65.71
Hauling and expressage	7.71
Hardware	12.34
Nickel plating	4.50
Electric molding	49.15
Steam pipe and fittings	145.01
Miscellaneous	14.03
Gas and electric current	2,442.80
Apparatus	137.85
Stationery	3.40
Reserved for unpaid bills	3,451.81
Total	42,500.00
Appropriated, sundry civil bill approved March 4, 1907	42,500.00

VENTILATING FAN AND MOTOR, SENATE WING.

Fan and motor house	$327.53
Lumber	64.63
Fan and motor	1,625.00
Wire and cable	154.96
Ventilating apparatus	789.00
Telegrams	.63
Brickwork	37.50
Unexpended balance	.75
Total	3,000.00
Appropriated, sundry civil bill approved March 4, 1907	3,000.00

ENGINE HOUSE, SENATE AND HOUSE STABLES.

Labor	$74.75
Carpenter and mill work and lumber	410.47
Roof and tin work	219.91
Plumbing and material	74.61
Paint, glass, etc	30.83
Electric wiring and material	1.30
Hardware	34.20
Painting and decorating	573.00
Ironwork	21.82
Sand	5.26
Brickwork	46.25
Reserved for unpaid bills	7.60
Total	1,500.00
Appropriated, sundry civil bill approved March 4, 1907	1,500.00

REPAIRS TO COURT-HOUSE AND NEW ELEVATORS, COURT-HOUSE, DISTRICT OF COLUMBIA.

Carpenter work, lumber, and millwork	$418.00
Electric wiring and material	776.13
Painting and decorating	1,284.55
Hardware	15.20
Lime, sand, cement, etc	11.87
Plumbing and material	203.65
Paint, glass, etc	90.64
Elevators	11,344.09
Ventilation	178.50
Cement flooring	1,108.40
Roofing	8.63
Reserved for unpaid bills	1,560.34
Total	17,000.00
Appropriated, sundry civil bill approved March 4, 1907	17,000.00

SENATE AND HOUSE OFFICE BUILDINGS.

The progress of the work of construction of the House and Senate office buildings has been and continues to be satisfactory.

The House Office Building reached that stage of construction in January of the present year that permitted the House of Representatives to dispose, by lot, of the rooms in the building and occupy the same during the last session of Congress. During the present season, the incidental work left undone prior to the session is being finished up. This refers to the completion of the rotunda, the conference room, the post-office, the bathing rooms and the hallways adjacent. During the last session of Congress provision was made,

by appropriation, for constructing the approaches to the building. This work is now going on, and it is expected that it will be practically completed by the meeting of Congress. The large court of the building will also be treated by the construction of a fountain, roadways, and large lawn.

The construction of the Senate Office Building is also progressing to that extent that strong hope is entertained that the office suites in the building can be occupied, if so desired, during the coming session of Congress. I am of the opinion that this building will be in better shape by the first of the coming year than the House Office Building was the 1st of last January. It is hoped that the main approaches to the Senate Office Building will also be well along by the time Congress meets. The construction of much of this approach work is purposely laid aside until some determination is reached with respect to the proposed purchase of property between the Union Station and the Capitol building, bills for which have already been introduced in the House and Senate. The determination of this question will largely affect the character of the remaining approaches and surroundings of the Senate Building.

Arrangements have practically been completed to enter into the final stages of construction of the details of the heating, lighting, and power plant, some portions of which I think will be available for service during the coming session of Congress.

ELLIOTT WOODS,
Superintendent U. S. Capitol Building and Grounds.

The SECRETARY OF THE INTERIOR.

REPORT OF THE SUPERINTENDENT OF YELLOWSTONE NATIONAL PARK.

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REPORT OF THE SUPERINTENDENT OF YELLOWSTONE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
YELLOWSTONE NATIONAL PARK,
OFFICE OF SUPERINTENDENT,
Yellowstone Park, Wyo., October 15, 1908.

SIR: I have the honor to submit annual report of conditions in the park from October 15, 1907, to the present date.

The Yellowstone National Park, set aside by act of March 1, 1872 (secs. 2474 and 2475, R. S., 17 Stat., 32), is located in the States of Wyoming, Montana, and Idaho. It has an area of 2,142,720 acres, and an average altitude of about 8,000 feet.

In the act making appropriations for the sundry civil expenses of the Government, approved May 27, 1908, an appropriation of $2,500 was made for completing the survey of and properly marking that portion of the boundary of the Yellowstone National Park remaining unmonumented, covering an estimated distance of 57 miles. A contract has been let, under the supervision of the Commissioner of the General Land Office, and in all likelihood the field work will be completed this season.

TRAVEL.

The branch line of the Oregon Short Line Railroad from Idaho Falls to the western boundary line of the park was completed and ready for passenger traffic at the opening of the tourist season of 1908, and the records show an increase of visitors to the park through the western entrance of about 3,000 over 1907. Of this increase 1,435 traveled by the Monida and Yellowstone coaches, 1,282 by the Wylie Permanent Camping Company coaches, and the remainder by licensed personally conducted camping outfits.

The aggregate number of persons taking the park trip over the regular route during the season of 1908 was as follows:

Travel in park during season of 1908.

Yellowstone National Park Transportation Company, entering via northern entrance		5,108
Monida and Yellowstone Stage Company, entering via western entrance		3,705
Others at hotels, traveling with private or government transportation, bicyclers, foot travelers, etc		368
Total with regular companies		9,181
Wylie Permanent Camping Company:		
Entering park via northern entrance	2,164	
Entering park via western entrance	1,282	
	3,446	
Other licensees of personally conducted camping parties	1,544	
Total number camping, traveling with licensed transportation		4,990
Making trip with private transportation as "camping parties"		4,577
Total number of visitors making tour of park season of 1908		18,748

Short trips:	
With regular companies, stopping at hotels	488
With Wylie Permanent Camping Company	57
With E. L. Robertson, special licensee for short trips	249
Total, short trips	794
Grand total of all visitors to the park, season of 1908	19,542

During the season 4,506 tourists took the trip across Yellowstone Lake with the T. E. Hofer Boat Company. Of this number about 40 per cent were traveling with the Yellowstone National Park Transportation Company, about 35 per cent with the Monida and Yellowstone Stage Company, about 15 per cent with the Wylie Permanent Camping Company, and the balance, about 10 per cent, came from licensed and private camping parties. Owing to inclement weather this company was delayed in getting a sufficient number of boats on the lake to accommodate all travelers, and during the first half of the tourist season was obliged to refuse many who desired to make the trip from Thumb to Lake Hotel by water.

Travel by the different entrances.

By the main gate on the north, Gardiner Station	10,973
By the Cooke road, northeast corner, Soda Butte Station	11
By the government road from Cody on the east, Sylvan Pass Station	762
By the road leading from Jackson Hole on the south, Snake River Station	624
By the Madison River road on the west, Riverside Station	7,172
Total	19,542

ROADS, CULVERTS, AND BRIDGES.

The following notes are furnished by Capt. E. D. Peek, U. S. Engineers, as to the work performed under his supervision:

The first crew began work on April 20, 1908, in the Gardiner Canyon, removing slide dirt, and making necessary fills and grading. The second crew also began on above date to repair the sprinkler tanks to get them in readiness for the beginning of the season. A third party began work on April 15, cleaning up the grounds and irrigating the plaza in the vicinity of Mammoth Hot Springs. No work could be carried on farther into the Park on account of the snow.

The work of opening the roads in the park was begun on May 20 when the first crews were sent out. The deepest snow, as always, exists between the Upper Basin and the Thumb. Two crews began work on this piece of road, one coming via the Upper Basin and the other via the Thumb. The three cabins on the Divide had been put in good condition last fall and supplied with fuel, so that the men were provided for and were not required to sleep in the snow. The sheds or stables at the above points were also supplied with hay, so the stock suffered no hardship.

The roads were all opened for tourist travel three days before the opening of the season on June 10. The difficulty of former years in the snow sections has been greatly overcome by marking all ditches and culverts with poles. As soon as these are sheveled out the water leaves very quickly and allows the roads to dry up.

The roads of the entire park were graded with a machine as soon as the weather permitted, which was in the latter part of June.

During the summer the following portions of road were graveled and resurfaced: From Gardiner to the 2-mile post; across Swan Lake flat to Golden Gate and beyond to Silver Gate; on the Norris road from 10¼ to 12½ miles; on the Fountain-Upper Basin road from 6½ to 7½ miles; on the Thumb Lake road from the 13-mile post to the Lake Hotel; on the Lake-Canyon road from the Lake Hotel to the 2-mile post. Upward of 25 miles of road in different parts of the park was reditched, regraded, and crowned.

Minor repairs were made on the Cody road and considerable work done upon that portion lying in the reserve beyond the park. The greater portion of the work consisted in repairing revetments and the Elk Fork bridge.

Considerable work was done on the west road leading to the Oregon Short Line Railway. The portion of road from the 5 to the 7 mile post was relocated and changed from the rolling hills to a grade along the river bank. This was a very marked improvement, on account of obviating the hills and the dust, which was excessive in the sands on the hills.

From the Madison junction to the lunch station on the Gibbon River the road was widened in 14 places to allow teams to pass easily.

Sprinkling was begun July 1, and practically continued until September 10, though on a portion of the system it continued until September 20.

The mileage of roads within the park is 306, and the portion lying in the forest reserve is 111, making a total of 417 miles.

The bridge across Willow Creek was replaced by a 6-foot culvert and a fill; bridges over Obsidian Creek and Apollinaris Creek were also replaced by 4-foot culverts and fills. These fills were only some 30 feet long.

The bridge over Otter Creek, 150 feet long, and one over Alum Creek, 120 feet long, were replaced by culverts and fills, and also bridges at 1½ miles beyond the Fountain and 1½ miles beyond the Upper Basin.

In addition to the above, over 50 new culverts were placed. Forty-six were made of corrugated iron and the balance of vitrified tile.

The three bridges on the Gardiner-Mammoth Hot Springs road were redecked, as was also the bridge crossing the Madison River on the western road.

FISH.

Four thousand rainbow trout were received from the hatchery at Spearfish, S. Dak., on Ocotber 14, 1907, of which number 200 were planted in Lava Creek, about 5 miles east of Mammoth, and the balance, 3,800, in Arnica Creek and other small streams tributary to Yellowstone Lake.

On May 27 and 28, 10 cans of rainbow trout were received from the same station and planted in the upper Gibbon River, between Norris and Canyon, and on the same date 55 cans of brook trout were received, 12 of which were placed in Glen Creek, and the balance in Willow Creek and tributaries.

Ten cans of rainbow trout were received from the Spearfish hatchery on September 5 and planted in Grebe Lake, and on the

same date 10 cans of landlocked salmon (shipped from the hatchery at Bozeman, Mont.) were received and planted in Duck Lake and tributaries of Yellowstone Lake.

Report from the superintendent of hatcheries in the park, Mr. D. C. Booth, has not yet been received.

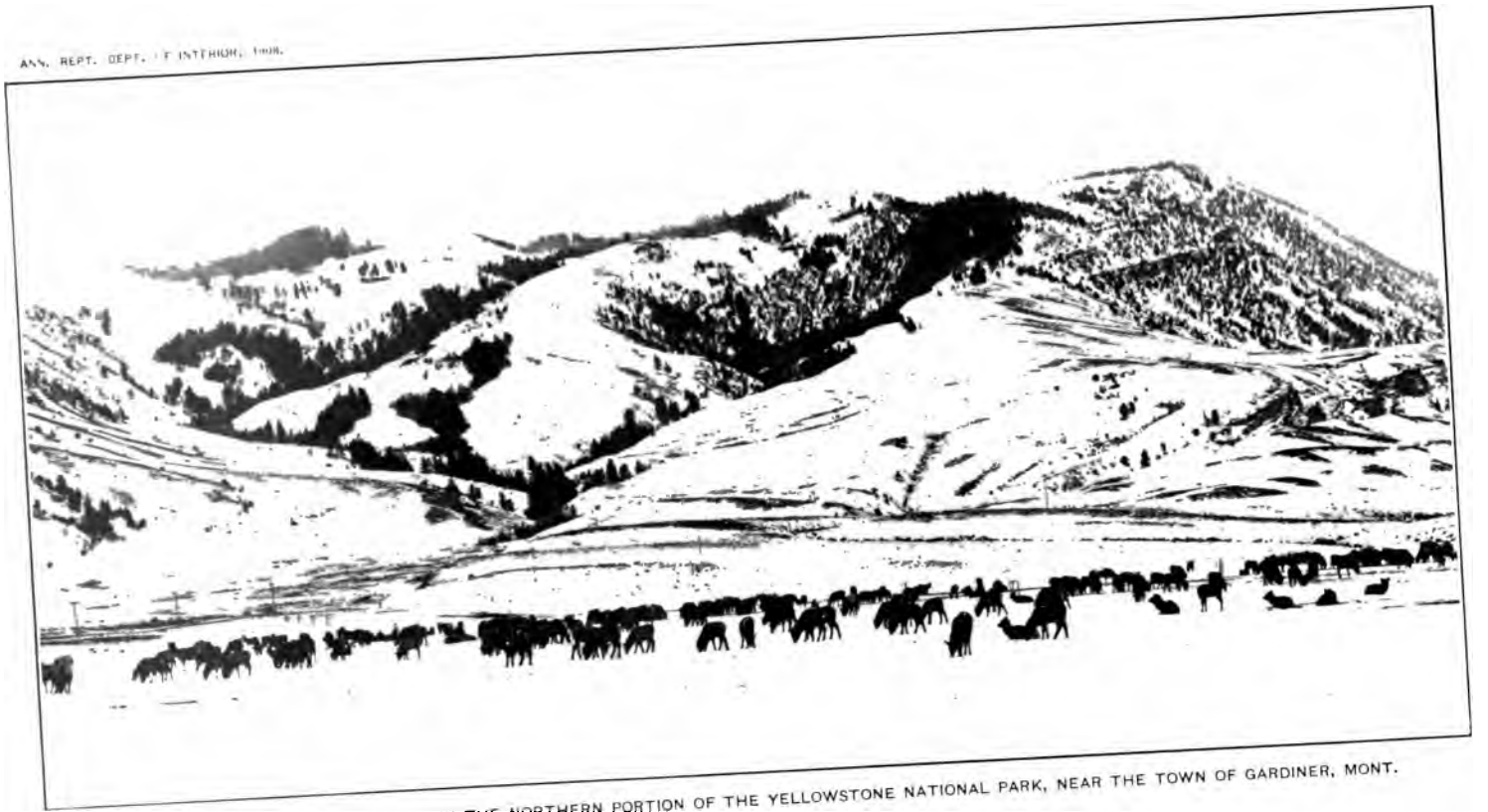
WILD ANIMALS.

Antelope.—Judging from the number of young seen, and from reports of scouts and patrols, the increase in antelope appears to be normal. The alfalfa field near Gardiner yielded two good crops. The yield in tonnage is greater than last year and is believed to be sufficient to carry the herds of antelope and deer through the winter. Two or three dozen of the male antelope summered in and near the alfalfa field and were an attractive sight to visitors entering from Gardiner.

The three antelope—1 male and 2 females—raised on the bottle for the London Zoological Gardens were shipped December 30, last, in care of Dr. W. T. Hornaday, director Zoological Gardens of New York, who kindly received and had them properly cared for until a caretaker arrived from London. They were reported as having arrived at their destination in good condition.

It is estimated that 3 per cent of the herd were killed by coyotes during the past winter and spring. Evidence was found of one killed by poachers close to the wire fence on the north line, within 2 miles west from Gardiner. A small band drifted out of the park near Gardiner and four of them were reported killed. The remainder were driven back into the park. A wire fence along the north line extending from the Yellowstone and Gardiner junction about 4 miles westward to a mountain bluff was constructed some years since to prevent the antelope from drifting out of the park and down the Yellowstone Valley. The preservation of the herd is due to this fence and to feeding alfalfa during the winter. The natural instinct of the animal carries it down the valleys to escape the cold storms of winter in the higher altitudes. Sometimes their curiosity leads a few to crawl out under the bottom wire which is 12 inches from the ground. The number of antelope in the park is approximately 2,000. The great majority of these now winter annually in the alfalfa meadow and foothills bordering the Gardiner River, near its confluence with the Yellowstone River, where they are fed alfalfa during the season of deep snows, within plain and near view of the people of Gardiner, where all the good citizens manifest a kindly disposition and concern for their preservation and protection. A number of people visit the town of Gardiner, at the northern entrance to the park, during the winter months to see the antelope. Many drive up the Gardiner Canyon and to Mammoth Hot Springs to see the mountain sheep and deer.

Although fine specimens of our native wild animals may be seen in confinement in many city parks throughout our country, the sight is not nearly so interesting and instructive as to see these beautiful wild animals in their natural habitat, where they have practically become tame and fearless as the flocks and herds of domestic animals, no doubt because of an instinctive conviction that in this particular nook of the mountains man is their friend and not their enemy.



WILD ELK ON THE ALFALFA FIELD, IN THE NORTHERN PORTION OF THE YELLOWSTONE NATIONAL PARK, NEAR THE TOWN OF GARDINER, MONT.

There is a value in mental uplifting in this sight of the wild animals in their natural home, practically fearless of man, as well as in the natural scenic beauties of this wonderland.

Buffalo.—Wild herd: Reports from scouts and patrols state that signs of two buffalo calves were seen on Mirror Plateau and one cow and calf were seen in Pelican Valley during the season. Scout Wilson reported that he saw 10 buffalo at the mouth of Mist Creek on Lamar River on April 13. On September 7 Scout McBride saw fresh tracks of 2 buffalo on Boundary Creek, near the western boundary, and on September 16 he saw 20 buffalo near the mush pots southwest of Pelican Cone in the valley of Pelican Creek. From these reports it is evident that the remnant of the original wild herd is gradually increasing in numbers.

Fenced herd: The two fierce old bulls which were not removed to Lamar Valley with the herd in the spring of 1907 were sold under authority of the department and the proceeds of sale forwarded December 17, 1907. The herd now in the fenced pastures in Lamar Valley shows a most gratifying improvement in condition and productiveness. The calves reared this year numbered 14, as against 5 last year in the Mammoth pasture field. The herd now totals 74, all in fine condition save one very old cow. Three miles of strong Montana anchor wire fence have been built around the new pasture and hay meadow during the year. About 100 tons of hay have been put up for winter use and the herd transferred to the new pasture of luxuriant native grass. While considerable work has been accomplished during the year in construction of main ditches, head gates, and laterals for irrigation of the hay meadow, it is quite necessary to do much more work in that line in order to insure a heavier crop of hay and a greater area of hay land for the future. By reason of the deep snows and long winters the herd must be fed hay for about five months. Allowing 25 pounds for each grown animal per day, it will require fully 100 tons for the 55 grown animals, not including the 5 yearling and the 14 calves. It is my intention, with the approval of the department, to grub and clear of willows about 20 additional acres of the meadow land inclosed, break it up, and seed it with timothy and red clover, which grow well in this altitude, in order to provide sufficient hay for the increased herd. This should be done each succeeding year for four years, in order to secure sufficient winter supply of hay for a constantly increasing herd. In order to carry out this plan an increase in the appropriation for maintenance will be necessary. In 1904 $2,500 was appropriated for the maintenance of the buffalo, which at that time numbered 28 head. The same amount has been appropriated each year since, although the herd has gradually increased till it now numbers 74 head.

The increase in males has been so much greater in proportion than females, and greater than is necessary for successful breeding, that I propose on June 1 of next year to transfer a number of bulls (10 or 12) to the field near Mammoth Hot Springs as a show herd for the benefit of the public during the tourist season. The increase by sex this year is 9 females and 5 males; 1 male calf died from injury. The herd, old and young, consists of 4 females and 31 males.

Bear.—The black bear appear to have increased, and although the grizzlies have shown a goodly number of cubs this season Mr. W. H.

Wright, a photographer and writer who spent two months in the park this summer studying the habits of the grizzlies, informs me that they are not so plentiful as they were several years since during his former visit to the park. Several complaints have been made of bears robbing camping parties of their commissaries and breaking into the kitchens of the guard stations and road crews, doing damage and destroying considerable stores. During my absence from the park in June one large black bear, reported dangerous around cottages at Mammoth Hot Springs, was shot by the order of Major Allen, commanding officer of the troops and at the time acting superintendent of the park. On September 5 the carcass of a large cinnamon bear was found in Prismatic Lake. It was so thoroughly cooked that it was impossible to determine the cause of death.

At the request of Dr. Frank Baker, in charge of the National Zoological Garden, Washington, D. C., one grizzly, aged between 3 and 4 years and weighing 500 pounds, was trapped and shipped to Washington July 23, and although the express car in which he was carried was derailed and overturned, Doctor Baker reported his arrival in good condition. A fine young mother black bear and two cubs were also trapped and shipped on September 30 to the same place. These also arrived in good condition. The skin and skull of one grizzly were sent December 19 to the National Museum, Smithsonian Institution, as noted they would be in my annual report for 1907, and receipt has been acknowledged.

The bear is the most familiar habitant of the park. During the tourist season these animals may be seen at almost any time, singly or in groups, prowling contentedly through the woods or about the garbage refuse of the hotels and permanent camps.

Beaver and marmot.—Beaver and marmot are abundant.

Coyotes.—It is a difficult matter to keep the coyotes down. Since my last annual report (which showed 99 coyotes killed in that year) 97 more have been killed. The growing scarcity of antelope, deer, and sheep in the States bordering on the park and the increase of these animals in the park causes the coyotes to gather here for their meat. One lynx was killed during the year. Also one red fox was shot by Scout Graham in the nighttime in mistake for a coyote.

Deer.—The deer (black-tailed) show a normal increase. During the deep snows and severe storms 300 to 400 mule (black-tailed) deer are fed hay on the plaza in front of Mammoth Hotel and Fort Yellowstone. Many of them feed close to the dwellings; some become quite gentle and take food from the hand. A band of about 100 feed with the mountain sheep in the Gardiner Canyon and on the slopes of Mount Evarts.

The white-tailed deer keep apart from their bigger brothers and sisters, yet they feed in close proximity to the barracks and stables of Fort Yellowstone during the severe winter weather. The increase in the deer family is quite perceptible when they range close to the houses and buildings at Mammoth during the winter.

Elk.—Information from all available sources seems to justify a conservative estimate of between 25,000 and 30,000 elk in the park. Mr. Wells, in charge of the buffalo farm, an experienced hunter and a man of good judgment, estimates the number to be between 40,000 and 50,000. The winter storms and deep snows cause large bands

to drift out of the park down the valleys of the Snake, Madison, Gallatin, and Yellowstone rivers, where many are properly taken by the licensed hunters, who are each entitled to kill one under the laws of the surrounding States—Montana, Wyoming, and Idaho. The meat hunter, however, often risks a violation of the law to provide meat for his family and some for sale; while the head, scalp, and tooth hunter ruthlessly kills and leaves the carcasses to rot.

On October 29 the remains of a dead elk were found about 3 miles west from the town of Gardiner, 2 yards inside the park line. It had been shot and the head taken.

There is no provision for feeding the elk in winter. They seem to do fairly well in the ordinary winter, but when the snow falls to an unusual depth—say one winter in four—many perish. The two elk calves (male and female) raised on the bottle last season were shipped to the park commission, Vancouver, B. C., December 16, and their arrival in fine condition was reported.

Moose.—The moose are gradually increasing on the marshes of the Upper Yellowstone River in the southeast and the Bechler River marshy areas in the southwest. On June 26 a bull moose was seen 3 miles south of Upper Basin Station, 50 yards from the road, and one was sighted on Blacktail in September. These animals are seen frequently by patrols from Snake River Station. Moose signs are reported in several other sections of the park.

Mountain lions.—Mountain lions are scarce. One was killed during the year. It was no longer necessary to keep the pack of hounds purchased in 1893 for the extermination of mountain lions, and under authority from the department the pack was sold, after advertisement, to the highest bidder.

BIRDS.

My annual report for 1907 contained some notes by Dr. T. S. Palmer on the summer birds of the park. The following species were seen on ponds in Lamar Valley on August 28, 1908. The eared grebe, black-necked stilt, wandering tattler, and yellow-headed blackbird. Dr. Alexander Lambert reports also that he heard the "squack" of the black and white night heron at Yellowstone Lake.

FOREST FIRES.

There was no damage by forest fires in the park during the year. One fire caused by lightning during a storm near Soda Butte Station was extinguished by rainfall before causing any damage.

POACHING.

The civilian scouts, with one exception, rendered effective service in preventing poaching and arresting poachers. The one exception was discharged for inefficiency. He had formerly been a soldier, and his discharge showed character excellent.

Poachers and other violators of the law were arrested in every quarter of the park, and several arrests were made outside the park in Wyoming and Montana on information and evidence furnished by park scouts, and the parties were convicted. It is evident, however, that many poachers escaped arrest. There are not sufficient scouts for thorough protection against poachers.

Cases tried before United States Commissioner John W. Meldrum in Yellowstone National Park during the period between October 15, 1907, and October 14, 1908.

1907.

Oct. 18. United States *v.* Jacob Garnick. Charge, hunting wild animals in Yellowstone National Park. Defendant fined $50 and costs and forfeited two guns and five traps.

Oct. 21. United States *v.* John Winegar and Charles Mackert. Charge, having firearms in Yellowstone National Park without the permission of the superintendent thereof. Defendant Mackert fined $50 and one-half of the costs. Defendant Winegar—this being his second offense—fined $100 and one-half of the costs.

Oct. 31. United States *v.* Samuel E. Nelson, a noncommissioned officer in charge of guard station Tower Falls. Charge, killing birds in Yellowstone National Park. Defendant fined $50 and costs.

Nov. 9. United States *v.* G. V. Allen, private soldier. Charge, carving name on tree in Yellowstone National Park. Defendant fined $5 and costs.

Dec. 3. United States *v.* Fred Chase, Gus Holtz, and Harry Workman. Charge, killing elk in Yellowstone National Park. Defendants fined $100 each and costs.

Nov. 21. United States *v.* Joseph Strukly. Charge, hunting wild animals in Yellowstone National Park. Defendant fined $50 and costs with forfeiture of gun.

Dec. 4. United States *v.* George Broadbent. Charge, killing elk in Yellowstone National Park. Defendant fined $100 and costs.

1908.

Jan. 28. United States *v.* G. J. Gibson. Charge, hunting wild animals in Yellowstone National Park. Defendant committed to guardhouse for a period of fifty days, and ordered to pay costs and forfeit gun, traps, and snowshoes.

Apr. 20. United States *v.* Joseph Duret. Charge, cutting growing timber in Yellowstone National Park. Defendant ordered to pay costs.

June 23. United States *v.* John K. Jones. Charge, killing a woodchuck in Yellowstone National Park. Defendant fined $10 and costs.

July 11. United States *v.* Frank Moore. Charge, carrying firearms in Yellowstone National Park without the permission of the superintendent thereof. Defendant fined $25 and costs.

Aug. 31. United States *v.* Bruno Hoepfner. Charge, disorderly conduct and bad behavior within the limits of Yellowstone National Park. Defendant fined $50 and costs.

Sept. 14. United States *v.* Grant Hopkins and W. O. Dockstader. Charge, larceny, in violation of section 5356 of the Revised Statutes of the United States. Defendant Hopkins held to United States district court. Defendant Dockstader discharged.

THE HOLD-UP OF AUGUST 24, 1908.

The unfortunate event, the hold-up of seventeen coaches, surreys, and spring wagons on August 24, and the robbery by one man of many of the passengers therein at a point on the main road between Old Faithful Inn and the Thumb of Lake Yellowstone, and about 4½ miles distant from the former, took place about 9 a. m. on August 24.

In accordance with the established time schedule, the first coach of Yellowstone Park Transportation Company loads at Old Faithful Inn at 7.30 o'clock in the morning; after all coaches of that company have been loaded, the Monida and Yellowstone Company coaches are loaded at same point and follow after. These are followed in turn by the coaches of the Wylie Permanent Camping Company—all on the road eastward toward the Thumb.

This was the order of travel on morning of August 24. As a precaution against dust and against accident on grades, drivers are instructed to maintain a distance of approximately 100 yards between

coaches. On the morning in question eight vehicles were not molested by the robber. It appears that the trooper on patrol passed the point where the robbery took place ahead of the first coaches. The interval between the eighth and ninth coaches in order of travel was rather extended, with an angle of the road intervening in a narrow defile, thickly wooded on either side. The ninth vehicle was stopped by the robber with repeating rifle at a "ready;" and in vulgar, blasphemous language he ordered a young man down from the box seat and made him carry a sack alongside the coach—into which passengers were commanded to deposit their money and jewelry. This was repeated with each of the sixteen vehicles following. No one received physical injury excepting one passenger, whose actions did not suit the robber and who was disciplined by a stroke on the head with the gun, which was discharged at the same time. The injury was not reported serious. Four of the looted coaches belonged to the Yellowstone Park Transportation Company, five to the Monida and Yellowstone Stage Company, and eight to the Wylie Permanent Camping Company. As near as can be learned by the separate memoranda handed in by the passengers the losses sustained by them in the robbery aggregated $1,363.95 cash and $730.25 in watches and jewelry. Upon being liberated the first coach of those robbed drove rapidly to the camp of the road sprinkling crew, located about 2 miles east of the hold-up point, where notice was given and a messenger dispatched to Old Faithful Inn—distant 6 miles—with news of the robbery.

The agent of the Yellowstone Park Transportation Company at the inn telegraphed the news to all stations in the park and notified the detail of soldiers stationed at Upper Geyser Basin, within a few hundred yards of the inn. He also states that he notified the officer in command of a troop of cavalry camped in the Lower Basin, about 9 miles distant by the old road. Telegraphic notice was received at Mammoth Hot Springs Hotel and immediately transmitted to my office by telephone. The message was repeated to Major Allen, who was up in the park, and he was requested to give the matter his personal attention. All guard stations were warned and instructed and two scouts present at Mammoth were dispatched to the scene. They made the ride (49 miles) in four hours. Major Allen, who was in the park with General Edgerly, came into Mammoth the same evening, and on the following morning reported that he had given the necessary orders to his troops by telephone and telegraph from Norris. The robber was on foot, and disposed of a few pocketbooks and purses near the scene of the robbery, where they were found in a clump of bushes. One of these contained valuable papers and all were returned to their respective owners.

The trail could only be followed a short distance. The robber had apparently taken off his shoes and passed into a densely wooded region. All United States marshals, sheriffs, and peace officers in surrounding States, counties, and towns were duly notified and given description of the robber, as nearly as could be ascertained from tourists and drivers in the hold-up.

All passengers in their excitement blamed the soldiers. The character of the country is such that the entire Army of the United States could not prevent an evil-disposed man from entering the park with a gun.

On the date of the hold-up one troop was on practice march in the park and was camped within 10 or 12 miles from Old Faithful Inn. One troop has been camped in Lower Geyser Basin all the season and one troop has been camped on Yellowstone River within a mile of Lake Hotel all the season.

So far it has been impossible to locate an escaped criminal who was convicted of poaching in the park and escaped from confinement in the military prison at Fort Yellowstone in October last. There seems to be a well-grounded suspicion that he is the perpetrator of this daring highway robbery. It is a slow and difficult task to conduct a systematic search for this criminal, without funds for expenses, by correspondence alone. The detectives in adjacent States, with whom I have corresponded since the robbery, work for a per diem and expenses and not for rewards offered, and although they have been informed that this office has no money for that purpose, they have never hesitated to give any information in their possession in regard to this particular matter.

ESTIMATES.

The following estimates of appropriations required for the ensuing fiscal year have been submitted: For administration and protection, including salaries aggregating $7,880, for chief clerk, chief scout, 5 scouts, and 1 teamster and messenger, $9,530; maintenance of buffalo, including salaries amounting to $1,920, for buffalo keeper and assistant buffalo keeper, $3,547; total, $13,077.

RECOMMENDATIONS.

In view of a settlement growing at the terminus of the railroad on western boundary line, it is recommended that an appropriation be asked to construct a wire fence of 5 miles on the boundary line, extending from the Madison River south, with a gateway on road entering from the railway station. This fence would prevent encroachment on the park grounds, keep out loose stock, and save the destruction of park game by settlers close to the line at this point. The area along this line is in part thinly wooded and in part devoid of trees. Estimate for this fence was forwarded to the department October 11, 1907.

I beg to renew the recommendation made in my last annual report to place the government and protection of the park under a selected and well-organized civil guard.

Very respectfully,

S. B. M. YOUNG,
Superintendent.

The SECRETARY OF THE INTERIOR.

RULES AND REGULATIONS.

REGULATIONS OF JULY 2, 1908.

The following rules and regulations for the government of the Yellowstone National Park are hereby established and made public, pursuant to authority conferred by section 2475, Revised Statutes, United States, and the act of Congress approved May 7, 1894:

1. It is forbidden to remove or injure the sediments or incrustations around the geysers, hot springs, or steam vents; or to deface the same by written inscription or otherwise; or to throw any substance into the springs or geyser vents; or to injure or disturb, in any manner, or to carry off any of the mineral deposits, specimens, natural curiosities, or wonders within the park.

2. It is forbidden to ride or drive upon any of the geyser or hot-spring formations, or to turn stock loose to graze in their vicinity.

3. It is forbidden to cut or injure any growing timber. Camping parties will be allowed to use dead or fallen timber for fuel. When felling timber for fuel or for building purposes when duly authorized, stumps must not be left higher than 12 inches from the ground.

4. Fires shall be lighted only when necessary, and completely extinguished when not longer required. The utmost care must be exercised at all times to avoid setting fire to the timber and grass.

5. Hunting or killing, wounding or capturing any bird or wild animal, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed in the park under other circumstances than prescribed above, will be forfeited to the United States, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation, and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof. On arrival at the first station of the park guard, parties having firearms, traps, nets, seines, or explosives will turn them over to the sergeant in charge of the station, taking his receipt for them. They will be returned to the owners on leaving the park.

6. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, is prohibited. Fishing for purposes of merchandise or profit is forbidden. Fishing may be prohibited by order of the superintendent of the park in any of the waters of the park or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

7. No person will be permitted to reside permanently or to engage in any business in the park without permission, in writing, from the Department of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the park unless in charge of a duly registered guide.

8. The herding or grazing of loose stock or cattle of any kind within the park, as well as the driving of such stock or cattle over the roads of the park, is strictly forbidden, except in such cases where authority therefor is granted by the Secretary of the Interior. It is forbidden to cut hay within the boundaries of the park, excepting for the use of the wild game, and such other purposes as may be authorized by the Secretary of the Interior or the park superintendent.

9. No drinking saloon or barroom will be permitted within the limits of the park.

10. Private notices or advertisements shall not be posted or displayed within the park, except such as may be necessary for the convenience and guidance of the public, upon buildings on leased ground.

11. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the park, and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

12. It is forbidden to carve or write names or other things on any of the mileposts or signboards, or any of the platforms, seats, railings, steps, or any structures or any tree in the park.

Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and be subjected to a fine as provided by the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park and to punish crimes in said park, and for other purposes," of not more than one thousand dollars, or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

INSTRUCTIONS OF JULY 2, 1908.

(1) The feeding, interference with, or molestation of any bear or other wild animal in the park in any way by any person not authorized by the superintendent is prohibited.

(2) *Fires.*—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. Where fires are built in the neighborhood of decayed logs, particular attention must be directed to the extinguishment of fires in the decaying mold. Fire may be extinguished where water is not available by a complete covering of earth, well packed down. Care should be taken that no lighted match, cigar, or cigarette is dropped in any grass, twigs, leaves, or tree mold.

(3) *Camps.*—No camp will be made at a less distance than 100 feet from any traveled road. Blankets, clothing, hammocks, or any

other article liable to frighten teams must not be hung at a nearer distance than this to the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Many successive parties camp on the same sites during the season, and camp grounds must be thoroughly cleaned before they are abandoned. Tin cans must be flattened and, with bottles, cast-off clothing, and all other débris, must be deposited in a pit provided for the purpose. When camps are made in unusual places where pits may not be provided, all refuse must be hidden where it will not be offensive to the eye.

(4) *Bicycles.*—The greatest care must be exercised by persons using bicycles. On meeting a team the rider must stop and stand at side of road between the bicycle and the team—the outer side of the road if on a grade or curve. In passing a team from the rear, the rider should learn from the driver if his horses are liable to frighten, in which case the driver should halt and the rider dismount and walk past, keeping between the bicycle and the team.

(5) *Fishing.*—All fish less than 6 inches in length should at once be returned to the water with the least damage possible to the fish. No one person shall catch more than twenty fish in one day.

(6) *Dogs.*—Dogs and cats are not permitted in the park.

(7) *Grazing animals.*—Only animals actually in use for purposes of transportation through the park may be grazed in the vicinity of the camps. They will not be allowed to run over any of the formations, nor near to any of the geysers or hot springs; neither will they be allowed to run loose within 100 feet of the roads.

(8) *Hotels.*—All tourists traveling with the authorized transportation companies, whether holding hotel coupons or paying cash, are allowed the privilege of extending their visit in the park at any of the hotels without extra charge for transportation. However, twenty-four hours' notice must be given to the managers of the transportation companies for reservations in other coaches.

(9) *Boat trip on Yellowstone Lake.*—The excursion boat on Yellowstone Lake plying between the Lake Hotel and the Thumb Lunch Station at the West Bay is not a part of the regular transportation of the park, and an extra charge is made by the boat company for this service.

(10) *Driving on roads of park.*—(*a*) Drivers of vehicles of any description, when overtaken by other vehicles traveling at a faster rate of speed, shall, if requested to do so, turn out and give the latter free and unobstructed passageway.

(*b*) Vehicles, in passing each other, must give full half of the roadway. This applies to freight outfits as well as any other.

(*c*) Racing on the park roads is strictly prohibited.

(*d*) Freight, baggage, and heavy camping outfits on sidehill grades throughout the park will take the outer side of the road while being passed by passenger vehicles in either direction.

(*e*) In making a temporary halt on the road for any purpose, excepting for lunch or camp, all teams and vehicles will be pulled to one side of the road far enough to leave a free and unobstructed passageway.

(*f*) In rounding sharp curves on the roads, like that in the Golden Gate Canyon, where the view ahead is completely cut off, drivers

will slow down to a walk. Traveling at night is prohibited except in cases of emergency.

(*g*) Transportation companies, freight and wood contractors, and all other parties and persons using the park roads will be held liable for violation of these instructions.

(*h*) Pack trains will be required to follow trails whenever practicable. During the tourist season, when traveling on the road and vehicles carrying passengers are met, the pack train must move off the road not less than 100 feet and await the passage of the vehicle.

(*i*) During the tourist season pack animals, loose animals, or saddle horses, except those ridden by duly authorized persons on patrol or other public duties, are not permitted on the coach road between Gardiner and Fort Yellowstone.

(*k*) Riding at a gait faster than a slow trot on the plateaus near the hotels where tourists and other persons are accustomed to walk is prohibited.

(*l*) Mounted men on meeting a passenger team on a grade will halt on the outer side until the team passes. When approaching a passenger team from the rear warning must be given, and no faster gait will be taken than is necessary to make the passage, and if on a grade the passage will be on the outer side. A passenger team must not be passed on a dangerous grade.

(*m*) All wagons used in hauling heavy freight over the park roads must have tires not less than 4 inches in width. This order does not apply to express freight hauled in light spring wagons with single teams.

(11) *Miscellaneous.*—Automobiles are not permitted in the park.

Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

All complaints by tourists and others as to service, etc., rendered in the reservation should be made to the superintendent in writing before the complainant leaves the park.

(12) The penalty for disregard of these instructions is summary ejection from the park.

Information relative to side trips in the park and the cost thereof can be procured from those authorized to transport passengers through or to provide for camping parties in the park, also at the office of the superintendent.

REGULATIONS OF OCTOBER 11, 1900, GOVERNING THE IMPOUNDING AND DISPOSITION OF LOOSE LIVE STOCK.

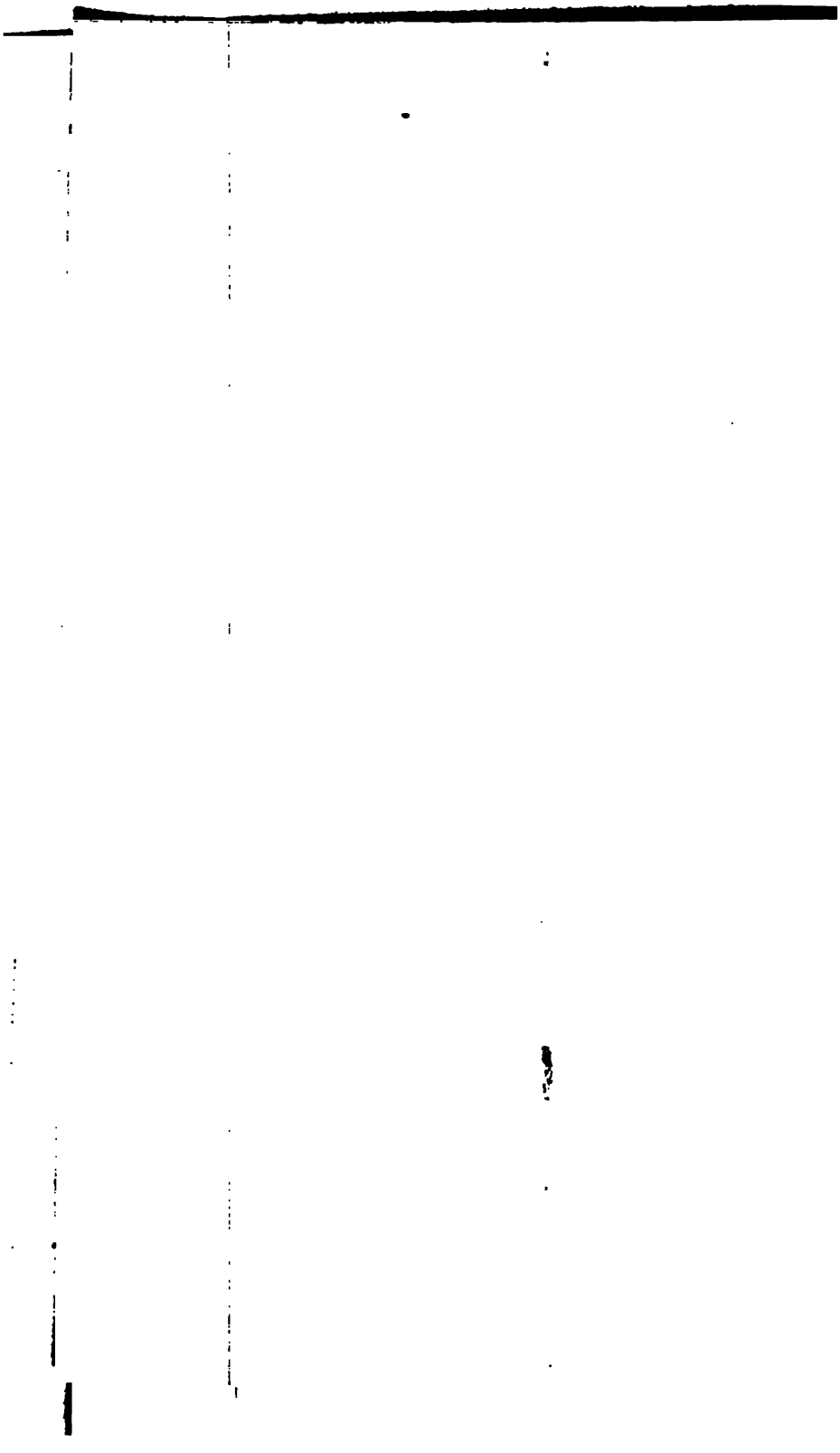
Horses, cattle, or other domestic live stock running at large or being herded or grazed in the Yellowstone National Park without authority from the Secretary of the Interior will be taken up and impounded by the superintendent, who will at once give notice thereof to the owner, if known. If the owner is not known, notices of such impounding, giving a description of the animal or animals, with the brands thereon, will be posted in six public places inside the park and in two public places outside the park. Any owner of any animal thus impounded may, at any time before the sale thereof, reclaim the same upon proving ownership and paying the cost of

notice and all expenses incident to the taking up and detention of such animal, including the cost of feeding and caring for the same. If any animal thus impounded shall not be reclaimed within thirty days from notice to the owner or from the date of posting notices, it shall be sold at public auction at such time and place as may be fixed by the superintendent after ten days' notice, to be given by posting notices in six public places in the park and two public places outside the park, and by mailing to the owner, if known, a copy thereof.

All money received from the sale of such animals and remaining after the payment of all expenses incident to the taking up, impounding, and selling thereof, shall be carefully retained by the superintendent in a separate fund for a period of six months, during which time the net proceeds from the sale of any animal may be claimed by and paid to the owner upon the presentation of satisfactory proof of ownership, and if not so claimed within six months from the date of sale such proceeds shall be turned into the Yellowstone National Park fund.

The superintendent shall keep a record in which shall be set down a description of all animals impounded, giving the brands found on them, the date and locality of the taking up, the date of all notices and manner in which they were given, the date of sale, the name and address of the purchaser, the amount for which each animal was sold and the cost incurred in connection therewith, and the disposition of the proceeds.

The superintendent will, in each instance, make every reasonable effort to ascertain the owner of animals impounded and to give actual notice thereof to such owner.



REPORT OF THE ACTING SUPERINTENDENT OF YOSEMITE NATIONAL PARK.

REPORT OF THE ACTING SUPERINTENDENT OF YOSEMITE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
YOSEMITE NATIONAL PARK,
OFFICE OF THE SUPERINTENDENT,
Yosemite, Cal., September 30, 1908.

SIR: I have the honor to submit the following report of the condition of affairs in the Yosemite National Park and of its management during the fiscal year ending June 30, 1908:

This park is situated in Tuolumne, Mariposa, and Mono counties, Cal., and originally covered an area of about 1,512 square miles. The lands embraced therein were set aside by act of Congress approved October 1, 1890 (26 Stat., 650), and were placed under the supervision of the Secretary of the Interior. By the act of February 7, 1905 (33 Stat., 702), and the joint resolution of June 11, 1906 (34 Stat., 831), the boundaries were changed, excluding a total of 555.94 square miles therefrom and including a total of 168.35 square miles not previously within the reservation, making the present area of 1,124.41 square miles, or 719,622.40 acres. The second change in boundaries included the recession of Yosemite Valley and Mariposa Big Tree Grove to the Federal Government.

The troops detailed by the War Department, in compliance with the request of the Secretary of the Interior and pursuant to General Orders, No. 66, dated March 23, 1908, Headquarters Department of California, for duty in the Yosemite National Park, consisting of Troops I and M, Fourteenth Cavalry, and a detachment of Hospital Corps, U. S. Army, left the Presidio of San Francisco, Cal., on April 16, 1908, and marched to the Yosemite Valley, arriving on April 28. All the supplies and equipment which had been shipped from the Presidio of San Francisco on April 15 were found at the camp on arrival.

The lack of a full quota of officers with the command was a great drawback, but unfortunately could not be remedied, as neither of the two squadrons stationed at the Presidio had more than half the authorized number of officers on duty with them. There were but four officers on duty at headquarters and with the two troops designated for duty in the park. This number is totally inadequate for thorough and careful performance of the duties required of the command, and it is urgently requested that steps be taken looking toward an increase in the number next season.

PATROLS.

Fifteen patrols, varying in size from 2 to 5 men each, were stationed at various points throughout the park, at distances varying from 20 to 75 miles from the main camp, for the purpose of preventing trespassing and other violations of the regulations. These

patrols were visited and inspected by an officer as often as practicable, and they were generally found to be performing their duties in an efficient and satisfactory manner.

GRAZING.

No sheep whatever crossed the border and only an inconsiderable number of cattle have been found within the park limits, and these few have been close to the boundaries. No stock has been driven through the reservation by permission of the acting superintendent.

Mr. J. B. Curtin, owner of patented lands in the park, when endeavoring to secure permission for cattlemen to graze their cattle upon the lands of the Yosemite National Park, made the statement, "In the Yosemite Park there are patented lands which the owners have used for rounding stations, and allowed their cattle to run in the park prior to the enforcement of the rigid rules regarding grazing thereon." This permission, however, was not granted by the Department and Mr. Curtin kept his stock off the park lands. He had previously grazed cattle on some 1,200 acres of land which he owned, or which being patented, was leased to him, and same being all under fence. The fence was erected by him for the most part this summer, under the direction and supervision of an officer on duty with the troops. This land lay within secs. 16, 17, and 18, of T. 2 S., R. 20 E., Mount Diablo meridian. Other than this no stock was pastured within the limits of the national park.

In the suit of J. B. Curtin *v.* H. C. Benson, acting superintendent, et al., instituted in 1905, the court was asked to restrain the acting superintendent from interfering with Curtin's cattle (which had been allowed to stray in the park and the adjoining forest reserve), upon the grounds that paragraphs 9 and 10 of the regulations promulgated April 22, 1905 (now paragraphs 7 and 8 of the regulations of February 29, 1908), were illegal and void. These paragraphs read as follows:

> Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; such lands, however, shall have the metes and bounds thereof so marked and defined that they may be readily distinguished from the park lands. Stock may be taken over the park lands to patented lands with the written permission and under the supervision of the superintendent.
>
> The herding or grazing of loose stock or cattle of any kind on the Government lands in the park, as well as the driving of such stock or cattle over the same, is strictly forbidden, except in such cases where authority therefor is granted by the superintendent.

The case was instituted in the state court, but later removed to the United States circuit court for the northern district of California. The decision of the court upheld the validity of the regulations referred to, but appeal has been taken by the plaintiff to the Supreme Court of the United States. It is not likely to be reached on the calendar during the present term.

FOREST FIRES.

This has been one of the driest years in the history of the park. There were no late spring rains and but very little snow fell during the winter months. Early in June the country was exceedingly dry, and it was only by constant vigilance and quick action that the entire park has not been swept by forest fires. Three fires started on the floor of Yosemite Valley, due unquestionably to lighted cigars or

cigarettes having been thrown from stages, as they were discovered within half an hour after the passing of stages along the roads. These fires were promptly extinguished without any damage. A large fire caused by lightning started on the southern border of the park near Alder Creek, and required the combined efforts of the rangers and a detail of 12 men to extinguish it. About 1 square mile was burned over. A large fire started in the national forest west of the park, near Hog ranch, and before it could be extinguished had extended over about 5 square miles, doing considerable damage to timber. Another fire occurred midway between the Hetch Hetchy Valley and McGill's meadows, and though a large force was sent in charge of officers, it was some two weeks before it could be completely extinguished. Great credit is due to the officers and men, especially to Captain Wells, for their energetic efforts and success in stopping the fire.

GAME.

Game is on the decrease. Each reduction of the park has cut off another portion of the winter resort of game. The western and southwestern portions of the park, as originally established, were the principal habitat of the deer and the only winter resort. This portion has now been thrown into the national forest. There are more hunting permits granted in the State of California than there are deer in the State, and as every person is allowed by law to kill 2 deer, and does kill 4 or 5 if he can, it can readily be seen what small chance a deer has for his life. This portion of the national forest has not been accessible to the general hunter until the present year, but now, with the new railroad, large numbers of hunters infest this country and lie along the border of the park, shooting every animal that is unfortunate enough to cross the boundary to get water. As water exists in but few localities in this portion and mainly in springs or very short streams the deer are forced to seek such points, and their location is readily determined by the deer trail. The so-called hunters secrete themselves along these trails and shoot every animal that passes. Extensive and careful patrolling has been done within the limits of the park to prevent hunting therein, and it is believed that but few hunting parties have succeeded in remaining therein. Had my instructions been complied with by the rangers one hunting party would have been arrested and put out, but by falsehood and misrepresentation this party made the rangers believe that they were without arms and so escaped. I went in person to look them up and followed their trail for over 40 miles in one day, but they had crossed the border before I could overtake them. People who are supposed to be gentlemen, and are ordinarily so rated, for some reason consider that it is not dishonorable to tell a lie about the arms in their possession when they are on a hunting trip. The orders are explicit, that whenever a number of men are encountered anywhere in the park that their packs shall be inspected exactly as a person's baggage is on entering a custom-house. In this way several parties have been detected and ejected from the reservation. Unless, however, steps are taken by the State to insure the arrest and punishment of violators of the law the State of California will soon be without deer. A number of bear have been seen during the season and also a number of grouse and mountain quail; more than were seen last year, but still the number is small.

FISH.

The fish hatchery at Wawona was, as usual, operated this year by the California Fish Commission. About 300,000 fry were hatched and distributed in the waters of the park, the troops distributing about 100,000. In addition to this there were netted from some of the smaller streams, which were dry during the summer, a number of fish, which were then placed in streams that had not been previously stocked. Some of the streams and lakes which were stocked about ten years ago have now become so full of fish that it is impossible to make a cast without having half a dozen immediately rise to the flies, resulting in a double or treble catch. No better fishing ground than the mountain streams of the Yosemite National Park exists anywhere.

FENCING.

It is again recommended that the western boundary of the park be fenced, using therefor barbed wire and international steel posts. There has been no trouble this year from trespassing of cattle or other stock, except upon a portion of the western and southwestern boundary. It is practically impossible to protect the entire western line with the few outposts that can be established, and there results some friction with the owners of cattle that are permitted to graze in the forest reserve immediately up to the boundary, but are not allowed to graze within the park. All of this friction could be easily avoided by the construction of a fence as suggested. It would require about 50 miles of fence, which could readily be put up at a cost of not more than $10,000; and it is believed that this would be one of the wisest measures that could be adopted for the prevention of friction and misunderstanding with cattlemen.

PATENTED LANDS.

I can but repeat what I said in my last annual report with regard to the patented lands lying within the limits of the park, and urge even more strenuously that action be taken looking toward the acquisition by the Government of these patented lands.

There are no persons now living upon patented lands within the limits of the Yosemite National Park, with the exception of Mr. Kibby, at Lake Eleanor. All patented lands upon which people were living were excluded from the park by the joint resolution of June 11, 1906. The only patented lands now retained are timber claims and a few claims that were taken up under the homestead act and were never occupied as homesteads, but simply used as a pretext for bringing in stock to stray upon the public lands. These private lands are no longer of any value to their owners as there is not sufficient grazing on them to keep half a dozen animals during summer. The timber claims are valuable and are becoming more so each year. Some of the finest sugar-pine timber in California lies within the limits of the park, along the line of the road from Wawona to Chinquapin station. Lumbermen from Michigan have been in the park this year inspecting this timber and have obtained an option for its purchase. The large tract of timber land which formerly was in the park, but was excluded by the act of February 7, 1905, has already been purchased by a lumber company, and a railroad is being constructed *directly* into this timber, and active steps are being taken to put the *lumber upon the* market. The Sugar Pine Lumber Company, which

formerly was operating about 40 miles south of the Yosemite National Park, has now completed its logging road (a steam narrow-gauge railroad) to within 2 miles of the former southern limit of the park, and the mountains are rapidly being denuded of all timber. This is what will happen to the timber upon all the patented lands within the limits of the park in a very short time unless these patented lands are purchased by the Government and all private rights within the limits of the park extinguished. This is a matter which needs urgent attention and should no longer be neglected. It would be greatly to the interests of the Government to purchase all private claims within the park and thus extinguish them. The necessity of preserving the forest in this portion of the park and of reducing the number of private claims to such an extent as would justify the Federal Government in purchasing the remaining claims was one of the main points which caused the Yosemite Commission of 1904 to recommend the reduction of the area of the park. This commission, as has every other person who has been charged with the welfare of the park or with making any recommendations with regard to it, recommended that the Government immediately purchase and extinguish all private rights. The acreage of timber and homestead claims in the park is approximately 19,827 acres.

TELEPHONE SERVICE.

Through the courtesy of the War Department, sufficient material was obtained for constructing a telephone line from the Yosemite Valley to Hetch Hetchy, connecting with three outposts, one at Crane Flat, one at Hog ranch, and the other at Hetch Hetchy. This line was well put up in an exceedingly short space of time by Captain Wells, of the Fourteenth Cavalry, he having completed the entire 35 miles within fifteen days. The work of patrolling that portion of the park has been greatly facilitated by the use of this telephone line, and the connection has also served very materially in the work on forest fires. Immediate information in regard to fires at Hog ranch and Hetch Hetchy were transmitted by this means, enabling large details to leave the valley immediately and arrive there about two and one-half days earlier than they otherwise would have been able to do. Incidentally, it was found of great convenience by the reporters who accompanied the supervisors of San Francisco when they were inspecting the Hetch Hetchy as a possible reservoir site for a water system for San Francisco. The Pacific Telephone and Telegraph Company, by permission of the department, constructed a line from El Portal, the terminus of the Yosemite Valley Railroad, to the Sentinel Hotel, in Yosemite Valley, so that now both telegraphic and telephonic communication can be had with the outside world, which greatly facilitates business and adds much to the convenience of the visitors.

ROADS, TRAILS, AND BRIDGES.

The condition of the roads in and about the Yosemite Valley is deplorable. The one great drawback to the visitor's pleasure is the fact that he is driven over rough roads so dusty that when he arrives at his destination his dearest friend could not recognize him. Nearly every visitor states "I can not see why something is not done to the roads." Many add, "We have just come from the Yellowstone, where

all the roads are watered, and we understood that such was the case here; had we known it was so dreadful we never would have come." It would be useless to attempt to put in a water system by which the roads could be sprinkled until the roads themselves are properly constructed, as the entire pipe line would be destroyed in the work necessary to properly build the roads. The roads should be widened, macadamized, and watered. No macadamized road can be prevented from raveling unless it is watered occasionally, either by natural rains or artificially by sprinkling. In this climate, where there is often a period of four or five months in which no rain falls, the use of sprinkling carts on the roads is absolutely essential, both to keep down the dust and to prevent the road from breaking up. The location of the main road from the terminus of the Yosemite Valley Railroad to the Sentinel Hotel is definitely fixed, and consequently the work on this road can be proceeded with when there are funds available for the purpose. The other roads should be carefully laid out with the view to having them placed in the best location for artistic effects and the general plan adopted at once before any great amount of work is put upon them. It is urgently requested that an appropriation of not less than $150,000 be secured for putting the road from El Portal to the hotels in proper condition. The visitors to the valley are entitled to this consideration, and to my mind it is of first importance.

During the past year about 3 miles of the worst portion of the road was so far macadamized as to be ready for the top dressing. A temporary dressing was put on, which has worked quite well, and this portion of the road is remarked upon by every person coming over it. About $17,000 was expended under two contracts with the Warren Improvement Company last year, on a percentage basis, which was found to be most satisfactory. A similar contract for aligning, straightening, and macadamizing the road on the south side of the Merced River, which will aggregate about $13,000, has been let this year to Chadwick & Sykes, and work thereon is in progress.

In addition to the 15 miles of road extending from El Portal to the Sentinel Hotel there are about 15 miles on the floor of the valley. These are all dusty and unpleasant to travel upon, and should receive attention as soon as the main road is repaired. Besides these roads there are 4 miles of road leading in the direction of Wawona, which originally lay within the state grant, and 4 miles leading toward Groveland, which was formerly a part of the Big Oak Flat road. Other than these all roads lying within the park are toll roads, being the Big Oak Flat, Coulterville, and Wawona roads, which are kept in fair condition by the corporations owning them, and the Tioga road, which is not passable except for people on horseback. The owners of the latter road attempt to keep up the appearance of control over said road by sending out a wagon during the last week in August and cutting their way through the woods, sometimes on the old road bed and sometimes off.

There are three main trails leading from the floor of the valley to the top of the rim about the valley. These trails are traveled by about 10,000 people each season and require constant care. They are in quite good condition, but it needs constant work to maintain them. The total length of these trails is about 24 miles. The trails throughout the park proper are in fair condition, but as very little work has been done on them since they were originally built, some need repair-

ing. This can readily be done at small expense by employing day labor. The following trails have been constructed this season by Thomas H. Carter, working under contract, for the sum of $3,500: From Rancheria Mountain, via Bear Valley, to Kerrick Canyon; from Kerrick Canyon, via Slide Canyon, to Matterhorn, connecting with existing trails. The northern part of the park is now practically supplied with trails, except a portion leading from Lake Eleanor over toward Twin Lakes.

The following bridge improvements have been made during the past year: The Pohono bridge has been replaced, and the iron bridge near the Sentinel Hotel repaired, for $2,385 and $993, respectively, both jobs having been done under contract by the Mervy-Elwell Company; and the bridge over the Merced River above Kenneyville (upper bridge) has been repaired by day labor, the total expenditure being $939.75.

HETCH HETCHY VALLEY.

The Hetch Hetchy has been brought more prominently to the notice of visitors this year than ordinarily, with the result that a larger number of people have visited it. It is one of the most interesting features of the park and should be made easy of access by a wagon road, which could be built at a very reasonable cost. From this valley numerous side trips by easy trails are available. Lake Eleanor, Lake Vernon, Rancheria Mountain, and Till Till Valley are all within an easy day's ride and return from the valley. Tilden Lake, Pleasant Valley, and Jack Mains Canyon are within an easy day's ride, the return trip being made the following day.

CONCESSIONS.

The following concessions were held in Yosemite National Park during the season extending from November 1, 1907, to October 31, 1908:

Concessions in Yosemite Park.

Name.		For what granted.	Expiration.	Annual rental.
Leases.				
Cook, J. B		Sentinel Hotel	Oct. 31, 1908	$2,000
Do		Glacier Point Hotel	do	200
Coffman & Kenney		Livery	do	850
Jorgensen, Chris		Studio	Oct. 31, 1914	1
Permits.	Numbers.			
Best, H. C	1	Studio; sale of photographs	Oct. 31, 1908	250
Boysen, J. T	2	do	do	250
Clark, Galen	3	Residence	do	1
Coffman & Kenney	4	Blacksmith shop	do	40
Degnan, John	5	Residence	do	20
Degnan, Mrs. John	6	Sale of bread	do	1
Flake, Geo	7	Photography	do	20
Foley, D. J	8	Printing office and sale guide books	do	250
Leitch, B. M	9	Cabin in Mariposa Big Tree Grove, and sale of photographs and curios.	do	20
Salter, Nelson L	10	Merchandise store and camping outfits.	do	600
Cook, J. B	11	Public camp	Oct, 31, 1909	500
Curry, David A	12	do	Oct. 31, 1908	500
Yosemite Stage and Turnpike Co.	13	Transportation and stables	do	1,250
Sell, W. M	14	Public camp	Oct. 31, 1910	600
Yosemite Transportation Co	15	Transportation and stables	Oct. 31, 1908	2,000
Pillsbury, A. C	16	Photography	do	250
Total				9,603

The Coffman & Kenney livery lease includes numerous buildings forming what is locally known as "Kenneyville," also large tracts of land on the floor of the valley. A new lease, running for a period of two years, will be granted for the livery privilege, stables and dwellings, together with a much smaller tract of land. Although this firm had previously indicated that they would very much like to retain the present acreage, but were willing to accept the lease as offered by the department, they later made application through Congressmen for retention of the same. This has been opposed for several reasons, and it was also reported against by Mr. M. O. Leighton, special sanitary expert, sent from the department to investigate the conditions of the water supply and drainage in the Yosemite Valley.

The Jorgensen lease includes about 5 acres of land, two dwelling houses, a stable and other outhouses, located in the immediate vicinity of Sentinel Hotel—one of the finest sites in the valley; for this lease, and the privilege of selling his paintings, he pays the absurdly low price of $1 a year, having secured this concession for a long term from the state commissioners, when it became apparent that the valley would be receded to the Federal Government. This is recognized as an unconscionable bargain, but the lease was so framed that its revocation is practically impossible.

HOTELS AND CAMPS.

Attention is again invited to the lack of first-class hotel accommodations. There is but one hotel on the floor of the valley, which was built many years ago, when it was very difficult to bring in material, and, as is to be expected, it is not a hotel supplied with modern conveniences. It is well managed and the best service given that can be expected under the conditions, but a new hotel, equipped in a first-class manner in every respect, is quite essential. This lease includes considerable land not now occupied or used by Mr. Cook, which, as has been recommended, should be omitted from any future concession. A heating plant and other improvements to the hotels have been installed by the department, at a cost of $4,000.

As yet no conclusions have been reached by Mr. Frank A. Miller in the selection of a site for the erection of a $500,000 modern hotel, in pursuance of his approved application for such privilege, for which a ten-year contract will be executed at the proper time. In the absence of definite action by Mr. Miller the department has signified its willingness to extend the lease of the Sentinel and Glacier Point hotels to Mr. J. B. Cook for the period of one year from November 1, 1908, in order that tourists may not be without the necessary accommodations. Certain portions of the tract now leased, however, which are valuable for other purposes, are likely to be eliminated from such new lease.

"Camp Yosemite," located near Yosemite Falls, was enlarged and newly equipped during the past season by Mr. Cook, the licensee; "Camp Curry," immediately beneath Glacier Point, was newly equipped and continued without increase in facilities; "Camp Ahwahnee," W. M. Sell, licensee, situated near the foot of the Glacier Point trail, was installed this year. The latter camp is practically under the same management as the hotel at El Portal, just outside of the park boundary. By the enlargement of the first-mentioned camp

and the establishment of a new one all visitors have been comfortably cared for and there has been no overcrowding during the season.

RIGHTS OF WAY.

By the acts of February 7, 1905, and June 11, 1906, certain portions of the park were eliminated and included in the Sierra National Forest (a part of which is now known as Stanislaus National Forest), and for rights of way over such segregated portions the Secretary of the Interior was authorized to exact a compensation, the proceeds from such sources to be applied to the Yosemite National Park revenue fund and used for the improvement thereof. The following cases have been considered under the provisions of such legislation:

The Yosemite Valley Railroad Company, running from Merced, Cal., was, under date of September 5, 1905, granted a right of way up the Merced River Canyon to the park boundary, for which it pays an annual rental of $1,000. On account of topography a wagon road was necessary to get the passengers from the terminus, El Portal, into the Yosemite Valley, and this the company constructed, with the permission of the department, at a total cost of approximately $80,000 for about 4½ miles of road, and when completed the road was turned over to the Government to be a public highway, subject only to the control of the United States.

The Fresno Traction Company in 1906, during the pendency of the joint resolution accepting the recession by the State of the Yosemite Valley and Mariposa Big Tree Grove, urged Members of Congress to have the bill amended so as to eliminate from the park a strip of land on the southwest, to enable it to secure a right of way for an electric railroad to reach a point near Yosemite Valley via Wawona, to carry only passengers, baggage, and incidental freight, but not to include the conveyance of any timber, lumber, or like materials cut at any point within the Yosemite National Park, or nearer thereto than Wawona, without the permission of the Secretary of the Interior, and stipulating that it would purchase not less than $25,000 worth of patented timber lands along such route (in the segregated portion), with a view to the better preservation of the forests, subject to an option of the Government to purchase, and that a wagon road would be constructed from its terminus to the system of roads reaching Yosemite Valley. Although it was upon these representations that the second segregation took place, the Fresno Traction Company has as yet taken no action toward securing the right of way referred to.

An application was filed by Augustus H. Ward for a right of way for conduit to convey water from the Merced River at a point lying on patented lands alleged to be in his ownership to a power house on other patented lands owned by him, all lying in the segregated portion of Yosemite National Park, for the purpose of generating electrical power for commercial purposes. He has, however, up to the present time refused to consent to pay the compensation fixed by the department and was not permitted to commence construction work.

Application was made by H. C. Oakley et al. for rights of way for dams, flumes, power houses, transmission lines, etc., within the Sierra National Forest, a portion lying within T. 4 S., Rs. 26 and 27 E.,

M. D. M., in the first segregation from the park, and permits were issued last year by the Forest Service, providing, among other things, that the permittees should "begin bona fide construction within twelve months and complete within four years after notice from the forester that construction may begin, unless the time is extended by written consent of the forester." An extension of time was granted to September 1, 1908, but no construction work was done, and a compensation contract has not yet been executed with the Interior Department.

The Sierra Ditch and Water Company (transferee of William Ham Hall) was, under date of July 30, 1908, granted a right of way for the Cherry Valley reservoir site, in secs. 16, 17, 20, 21, 27, 28, 32, and 33, T. 2 N., R. 19 E., M. D. M., covering about 630 acres of land owned by the United States, located entirely upon the segregated portion now in the Stanislaus National Forest. The compensation was fixed by the department at $945 per annum, the company to pay additional amounts for the timber cut or submerged.

Under date of May 20, 1908, the Pacific Telephone and Telegraph Company was granted special-use permits to extend its line through the Sierra National Forest to the Yosemite National Park boundary, and from such point into Yosemite Valley, the consideration being the free use of such facilities for government business to or from the park, with a provision that a rental may be exacted when the circumstances warrant.

One H. M. Kuns secured a permit from the Forest Service during the present year to construct a ditch to convey water from the Merced River for the operation of a stamp mill for crushing ore taken from a mine owned by him, the Interior Department consenting, in this and other instances to make no charge where the exercise of the privilege inures only to the benefit of the applicant. The right is reserved, however, to exact compensation when commercial use is made of the privileges granted.

SAN FRANCISCO WATER SUPPLY.

In 1907 the Secretary of the Interior granted a hearing at San Francisco in regard to reopening the matter of granting reservoir rights of way in the Hetch Hetchy Valley and at Lake Eleanor, in the Yosemite National Park, for the furnishing of an adequate supply of Sierra water for the city of San Francisco, under an application of James D. Phelan, former mayor of the city, which had been filed October 15, 1901, later assigned to the city, and denied by the department. Mr. Marsden Manson, C. E., city engineer, department of public works, was given authority to act for the city, and after extended hearings, conferences, and the submission of briefs for and against the proposition, the Secretary, in the exercise of the discretion vested in him by the act of February 15, 1901, reinstated the Phelan application on May 11, 1908, and granted the option which the city of San Francisco desired, until the matter could be submitted to the voters and definite action taken, upon the filing of certain stipulations affording ample protection to the park lands and to the rights of the Modesto and Turlock irrigation districts to the use of the flow of the Tuolumne River. The stipulations also provide,

among other things, that the Lake Eleanor site shall be developed to its full capacity before beginning the development of the Hetch Hetchy site.

EMPLOYEES.

There are 5 regular employees in the park administrative force; a supervisor, at $1,200 per annum; a chief electrician, at $1,200; a plumber, at $1,000; one park ranger, at $1,000, and one at $900. The following are employed during the tourist season only: An assistant electrician, at $90 per month, and a stenographer, at $75 per month.

BUILDINGS.

There are 46 buildings in the valley, all but 1 are frame, the exception being the Le Conte memorial lodge, which is constructed of stone. These buildings constitute the residences, barns, stables, and outhouses used by the concessioners and the department. The power house is a frame building, in god condition, but the installing of the machinery was very poorly done, and there is great need of repairs. The barns and stables are all in good condition. The residences are, for the most part, unsightly and totally unsuited to the valley. The building occupied by the supervisor is a log cabin, built forty-odd years ago and is in imminent danger of collapsing. The house occupied by Mr. Degnan is rather an attractive cottage and is in good condition. The hotel buildings in the main are very old and rather dilapidated, and are not in keeping with the valley itself. The superintendent's office is a frame building, the most recently constructed of any; this was simply a patched-over building moved from another locality, but it is still serviceable. The village, so called, has grown up since 1900, and resembles the temporary houses built for a county fair more than the residences and offices of a government institution.

POWER PLANT, WATER DISTRIBUTION, AND SANITATION.

The power plant is at present in a precarious condition, due to the fact that the pipe furnishing the water runs through a tunnel of loose earth and rock, which tunnel has already caved in, and there is imminent danger of the plant being put out of commission at any moment. The reports submitted to the department by Mr. Leighton on September 22 and December 4, 1907 (Appendix B), are respectfully referred to as showing the urgency of this matter. The pipe of this line is of very thin material, being of the riveted form made in sections with slip joints similar to ordinary stove pipe. The installation of the machinery was also very defective, as is shown by the report of the chief electrician herewith (Appendix C). The capacity of the plant should be increased. All the power that it can supply is now disposed of, and as it is highly probable that there will be an increased demand for both power and light it would also be a good business proposition. The matter of increasing the water supply for the power house is closely connected with the installation of a proper water distribution system throughout the valley. At present the system is very imperfect; the water supply itself is excellent, coming from a spring at the head of one of the small canyons, but the dis-

tributing system is in a deplorable condition. It consists of the cheapest form of riveted pipe, which has been laid for some time, and is constantly breaking and causing an infinite amount of trouble and annoyance. As shown by Mr. Leighton's estimate, it would cost about $40,000 to put in the proper pipe for supplying the power house and the water for the distributing system as far as the power house. The distributing system for the valley proper would cost $122,370 more. It is earnestly requested that at least $40,000 be secured during the next fiscal year. Early in the season certain suggestions of Mr. Leighton relative to sewage disposal at Camp Ahwahnee, Camp Curry, and Kenneyville, the collection of garbage from hotels, etc., were carried out.

UNDERBRUSH.

Attention is again invited to the necessity for removing the underbrush and young trees that have taken complete possession of the floor of the valley during the last fifteen years. As it is at present, the floor of the valley resembles a jungle. The views from nearly all points along the road have been cut off, and the trees are so thick that none of them can possibly amount to anything. If the trees were thinned out, careful selection being made to leave the best, a beautiful forest could be secured instead of the thicket which now exists.

VISITORS.

The total number of visitors to the valley during the past season of 1908 was about 8,850, an increase of 1,748 over the previous year. Of this number, about 7,381 came in over the Yosemite Valley Railroad, and were transported from El Portal to the valley by the Yosemite Transportation Company. This number was, however, largely made up of excursions for which reduced rates were paid. One thousand four hundred and sixty-nine people came in by private conveyance, either in wagons or on horseback. Of the 7,381 tourists, 3,012 took the trip from the valley to the Mariposa Big Tree Grove with the Yosemite Stage and Turnpike Company. Many of the people who came in by private conveyance also drove through to the Mariposa Big Tree Grove, though the percentage was probably not very great.

The 7,381 tourists were distributed among the camps and hotels approximately as follows: Sentinel Hotel, 2,777; Camp Yosemite, 2,004; Camp Curry, 1,350; and Camp Ahwahnee, 1,250. About 2,000 of these also spent one night at Glacier Point Hotel or camp.

ESTIMATES.

The following are the estimates for the expenditures required during the fiscal year ending June 30, 1910:

Estimates for fiscal year 1910.

FOR THE PROTECTION AND IMPROVEMENT OF YOSEMITE VALLEY.

1. Day labor in repairing existing trails, roads, culverts, etc	$4,000
2. Care of camps, policing, sanitation, etc	3,000
3. Pay of chief electrician	1,200
4. Pay of assistant electrician, seven months	630
5. Pay of supervisor	1,200
6. Pay of plumber	1,000
7. Pay of stenographer, ten months	750
8. Pay of stenographer, two months	100
9. Purchase of draft animals	600
10. Purchase of three water carts to be used in the watering of roads	2,100
11. Purchase of three teams for water carts	2,400
12. Purchase of forage for three teams to be used on water carts	1,500
13. Purchase of forage for draft teams	500
14. Purchase of material and installation of water system as far as the power house	40,000
15. Purchase of material and installation of water distribution system	123,000
16. For construction of macadamized roads	150,000
17. For the removal of underbrush, dead timber, etc	20,000
18. Building of quarters for the supervisor to replace present unserviceable building	2,500
19. For the purchase of the necessary pipe and water tanks to provide for road sprinkling	18,000
Total	372,480

FOR THE PROTECTION AND IMPROVEMENT OF THE YOSEMITE NATIONAL PARK PROPER.

1. For the necessary wire, brackets, insulators, and nails to construct a telephone system connecting Yosemite Valley with outposts, 200 miles	$2,000
2. Pay of two park rangers	2,000
3. For the construction of a barbed-wire fence with international steel posts along the western boundary of the park, about 60 miles	10,000
4. For the construction of a trail from Mirror Lake via Mount Watkins to Lake Tenaya, 15 miles, more or less	3,500
5. Construction of a trail from Merced Lake up the Merced River Canyon to the head of the Merced near Isberg Pass, 25 miles, more or less	5,000
6. Construction of trail from the head of Lyell Fork meadows to the foot of the glacier on Lyell, 8 miles, more or less	1,000
Total	23,500

RECOMMENDATIONS.

1. It is urgently recommended that an appropriation of not less than $150,000 be secured for the widening, macadamizing, and watering of the main road leading from El Portal to the Sentinel Hotel. This is of first importance.

2. That the water system be enlarged and the power plant increased.

3. That ample hotel accommodations be provided.

4. That all patented lands lying within the present limits of the park be condemned and purchased by the Government, especially the timber claims, on which the timber is likely to be soon destroyed if not purchased.

5. That the western boundary be fenced.

6. That a permanent military post be established.

7. That Congress enact a law defining what is prohibited in the Yosemite National Park and fixing a penalty for the violation of the same. Every acting superintendent of the park has felt the necessity for and has recommended the enactment of laws prescribing penalties for violations of the rules and regulations. Even when laws or regulations are violated, no way is provided for bringing the offenders to trial, there being no United States commissioner or district court within 100 miles of the park. I strongly recommend that the Yosemite National Park be made a United States court district and a resident commissioner be appointed. The rangers could serve as deputy marshals without interfering with their other duties. If appropriate legislation is enacted and a commissioner appointed, trespassing upon the park could more readily be brought to an end and without causing the friction which sometimes arises from enforcing the rules and regulations with the means at hand. The rigorous enforcement thereof with the present facilities puts a stop to trespassing, but causes complaint.

Very respectfully,

H. C. BENSON,
Major Fourteenth Cavalry,
Acting Superintendent Yosemite National Park.

The SECRETARY OF THE INTERIOR.

APPENDIXES.

APPENDIX A.

ROADS IN YOSEMITE NATIONAL PARK.

DEPARTMENT OF THE INTERIOR,
UNITED STATES RECLAMATION SERVICE,
Phoenix, Ariz., December 10, 1907.

DEAR SIR: In accordance with your orders I visited the Yosemite Park and consulted with Major Benson concerning roads already built and to be built in and about the park.

Since you were there Major Benson has built about a mile of road on the left-hand side of the river and has very greatly improved a section of the road on the right-hand side of the river just above the entrance to the park. The first roads to be constructed and made into first-class highways are as follows:

First. The main road leading from the entrance of the park just above El Portal to the Yosemite Valley. This road as now constructed is too narrow in most places, too irregular in its grades, and improperly surfaced. It will be necessary to widen it, so as to have a total width of from 14 to 20 feet, depending upon the topography. It will probably be cheapest to surface the lower end of this road with material to be found along the line of the railroad a comparatively short distance below El Portal. The material above El Portal is nearly all a very fine-grained granite, which under traffic will crush into dust. This road should be kept watered, as over it will pass practically all the traffic that enters the park. This can readily be done by building water tanks at frequent intervals and supplying these tanks from the springs and small waterfalls along the line. It will require quite a large amount of pipe and a number of tanks, but with the material at present in the park it will be impossible to maintain this road in any shape unless it is kept well watered.

Second. The roads within the boundaries of the valley leading to the various points of interest. These roads now exist as simple driveways cut out through the undergrowth and with the least amount of work done on them that was possible. By careful location and construction they can be made into first-class roads 20 feet wide without serious expense per mile.

Third. Roads leading from the valley to points of interest at the top of the cliffs surrounding the valley. One of these roads will start near the Sentinel Hotel, follow up, in a general way, the Merced River above the present power house, thence winding upward past Vernal and Nevada falls, turning westward until it crosses Illilouette Creek, will finally reach Glacier Point. This road, if properly located, could be built so as to give along almost its entire course a magnificent view of the Yosemite Valley.

Fourth. Another road joining this road at Glacier Point can be built following along the top and as near the edge of the cliffs as possible, in a general westerly direction until it finally joins the present Wawona road, winding back down this road, or better, over a new road built later to take its place, back into the Yosemite Valley.

Later on other roads can be laid out along the same general lines on the north side of the valley.

About $150,000 can be most advantageously spent next year upon the roads already existing in the valley and the road from El Portal to Yosemite. If a regular appropriation of about $150,000 a year can be secured after this, the roads and trails in and around this valley will after a few years compare favorably with those in the Yellowstone Park. An appropriation of a much

less amount would necessitate an organization which would increase the price per mile of the road materially.

In the future I would suggest that all bridges be made arch bridges of either reenforced concrete or granite. The cost of a first-class reenforced concrete bridge, including its abutments and approaches, is really not so very much greater than that of a steel bridge when its abutments and approaches are taken into consideration. The concrete bridge is much more satisfactory from a maintenance as well as from an artistic point of view.

I would also recommend that all structures of whatever kind forming parts of these roads be of the most permanent character, as experience on the roads constructed in Arizona has proved that first-class construction is more economical in the end. In four years we have practically replaced every wooden structure we had on our road, except some of the main bridges which are located in places where they can readily be inspected and painted. We would not have used wooden bridges at all on our roads if the roads had been designed for permanent use.

Appropriations for building and repair of roads in the Yosemite National Park should be in such form that the details of its expenditure should be left to the judgment of the man in charge. It is almost impossible to foresee how much of the money available must be spent on bridges, on equipment, and on labor. If possible, the appropriation should be obtained in such form as not to hamper Major Benson in any way.

Very respectfully,

LOUIS C. HILL,
Supervising Engineer.

Hon. JAMES R. GARFIELD,
Secretary Department of the Interior, Washington, D. C.

DEPARTMENT OF THE INTERIOR,
UNITED STATES RECLAMATION SERVICE,

DEAR SIR: Your letter of December 16 was received upon my return from Roosevelt. Some of the information desired by you can only be obtained after careful surveys have been made over the lines of the proposed roads. The following, however, is an approximate statement as to the length and average cost of these roads. Excepting that portion of the road in the canyon just above El Portal, all the roads in the bottom of the park proper should average $12,000 to $15,000 per mile. The road from Yosemite to Glacier Point, which will pass Vernal and Nevada Falls and swing along the edges of the bluff, will have a length of about 14 miles, 5 miles of which might cost as high as $40,000 per mile and the remaining 9 miles with surfacing will probably average about $25,000 per mile. The road from Glacier Point running generally in a westerly direction along the tops of the cliffs joining the Wawona road and following it part of the way down into the valley, will have a length of about 18 miles and will probably ultimately cost $20,000 a mile, including surfacing.

I did not investigate, and can not very well do so from the maps, the roads on the north side of the Yosemite River which should, some time in the far future, be built to the top of El Capitan and to the top of Yosemite Falls. These roads will probably cost somewhat less per mile than those on the south side of the river.

Of course, the costs stated here are estimates based simply on the knowledge of the cost of building roads in a somewhat similar country. An accurate estimate could only be made after careful surveys of the proposed roads had been made.

The road from Yosemite via Vernal and Nevada Falls to the top of Glacier Point would make the road down at Fish Creek appear rather insignificant. The highest point at Fish Creek is about 800 feet above the bottom, while at Glacier Point the highest point is about 3,500 feet above the valley.

I recommended that a sum of money be appropriated to have surveys made of the proposed roads in order that the appropriation for the roads can be expended to the best advantage by Major Benson, as it can be when he has the whole scheme mapped out beforehand.

Very respectfully,

LOUIS C. HILL,
Supervising Engineer.

Hon. JAMES R. GARFIELD,
Secretary Department of the Interior,
Washington, D. C.

APPENDIX B.

SANITARY CONDITIONS AND WATER SUPPLY.

EN ROUTE FROM DULUTH, MINN.,
September 27, 1907.

MY DEAR MR. SECRETARY: In compliance with your request, made during the visit of the Inland Waterways Commission to Cleveland, that I prepare a statement concerning the conditions in Yosemite Valley, I respectfully present the following:

Shortly after leaving Yosemite Valley I forwarded, through the Director of the Geological Survey, a recommendation that no further concession be granted for Camp Curry on its present site, and setting forth briefly my reasons therefor. Since that time the proprietor of Camp Curry has forwarded to you a protest against the enforcement of any change in his camp site, a copy of which he kindly sent to me. I am of the opinion that if he desires to confine the capacity of his camp to 200 guests, there will be no difficulty in making sanitary the surroundings at the present site. The principal reason for my original recommendation was that it was Mr. Curry's professed intention to increase his capacity to 500 guests. In view of his statement that he would prefer to reduce his capacity, rather than be compelled to move his camp, I recommend that a concession be granted for the present site, on condition that he confine the capacity of his camp to 200 guests, and upon the further condition that he immediately construct a sewerage and a sewage-disposal system, according to plans approved by the Secretary of the Interior.

The most important consideration in connection with the maintenance of Yosemite Valley as a tourist resort is the water supply. The present supply is entirely inadequate, although of superior quality. It is derived from a spring at the foot of Glacier Point. Occasionally it is necessary to draw upon the power pipe line running from an intake on Merced River, about one-half a mile above the power house, to the site of the present power plant. It may confidently be expected that with the increase of travel into the valley the capacity of the spring will be overtaxed within a short time. Indeed, if proper distribution equipment were installed in the valley it would have been insufficient during the last season. I am therefore of the opinion that it will be necessary to abandon the spring as a source of supply for the valley, and draw the entire supply from the upper Merced River. This change should be made as soon as possible, and there is involved the expenditure of a considerable sum of money.

The present pipe line, power plant, water-distribution service, etc., were installed when the valley was in state ownership. The pipe line conducting the water to the power house is constructed of the cheapest possible material, a thin riveted pipe, made in sections with slip joints, somewhat similar to those of the ordinary stovepipe. No riveting was done at these joints, and the pipe along its entire length is constantly in a leaky condition. In addition to this, the material is so thin that it has rusted through in several places. Furthermore, through a part of the distance the pipe was laid in a sort of tunnel, constructed through an accumulation of loose bowlders, sand, etc. The tunnel is entirely without reenforcement and is constantly caving, so that at the present time it is impossible to inspect the pipe line for a considerable distance, and there is imminent danger that the caving tunnel will release a bowlder of sufficient weight to collapse the thin pipe and shut off the power plant entirely. The whole construction, so far as the pipe line is concerned, is an engineering botch, suggesting an entire lack of responsibility on the part of former authorities in charge of the valley, or worse. It is absolutely necessary that some steps be taken at the earliest moment to replace the pipe line; otherwise the valley may be in darkness during the next tourist season.

Inasmuch as it will be necessary to replace the pipe line, I recommend that it be made of a size sufficient to supply all the power that may reasonably be needed in the valley and also to supply at least 1,000,000 gallons a day for consumption by settlers and campers. It is probable that there are only a few days in any tourist season that the consumption of 1,000,000 gallons per day would be required, nevertheless I believe it wise to install up to that capacity, principally by reason of the fact that it would insure an excellent fire protection, and again because no one can tell how heavy the traffic into the valley will become under the new management and increased transportation facilities.

I will present later, in a detailed report, specifications and estimates of cost for such a pipe line.

The water-distribution service in the valley is worse, if it is possible, than the pipe line above described. It is built largely of the same material, has an enormous leakage, and is a constant source of annoyance and expense for repairs. It is my purpose to recommend a new distribution system, consisting of two 6-inch mains running down the valley along the two main roads on each side of the river, and after being reduced to 3 inches in diameter a short distance below the Sentinel Hotel to be carried down to a junction at El Capitan Bridge. Proper taps should be made from this water main, and especially should there be hydrants located along the roads for fire protection. Smaller hydrants should also be installed at the camp sites. I will present specifications and estimates for this in a later communication.

At the present time the public camp sites in the valley are all above Yosemite Hotel, the reason being that the water in Merced River below is polluted, and, with the exception of Bridal Veil Creek, there is no other water supply in the lower part of the valley. It is for this reason that I propose to recommend a somewhat extended water distribution system as far as El Capitan Bridge. With proper hydrant facilities, campers will not be forced to use the polluted Merced water. After considerable thought I am forced to the belief that it will be impossible to maintain the waters of Merced River in a condition fit for domestic consumption in the raw state. It would, of course, be possible to purify the sewage matter now discharged into the river from the Sentinel Hotel and other places similarly situated, but this will in no wise guarantee a sufficiently pure water supply from the Merced River. Wherever people are closely gathered in camps, hotels, etc., it may be expected as a certainty that the natural drainage of this occupied land will be sufficiently contaminated to be dangerous. In fact, the surreptitious pollutions from camp sites may always prevail, unless a battalion of troops be placed in charge of the valley, and I doubt whether this number of guardians would be effectual. Therefore it is my belief that the Government should accept the position that the pollution of Merced River is unavoidable and prepare its policy and its improvement in Yosemite Valley with that in view. The distribution of water through the pipe lines above noted will obviate the necessity for using the river water, and I will present in a later communication detailed plans and estimates for such protective works as appear to be necessary to install at such places as Yosemite Hotel, Camp Curry, etc.

The present pasturage concession of Coffman and Kenney should be revoked as soon as the legal requirements and proprieties in the matter will permit. This concession is a large one and contains several first-class camp sites, to which visitors in the valley should have free admission.

It is my purpose to recommend further a daily collection of garbage throughout the entire valley during the tourist season. This work should be placed in the hands of a superintendent, and not left to the individual concessioners.

Very respectfully, yours,

M. O. LEIGHTON,
Chief Hydrographer, U. S. Geological Survey.

The Honorable SECRETARY OF THE INTERIOR.

DEPARTMENT OF THE INTERIOR,
UNITED STATES GEOLOGICAL SURVEY,
WATER RESOURCES BRANCH,
Washington, D. C., December 4, 1907.

SIR: I have the honor to submit herewith a report of my investigation of the sanitary conditions in Yosemite Valley, California, together with certain recommendations designed for the improvement of these conditions.

Yosemite Valley may be divided into two parts with reference to its sanitary condition—that above Sentinel Hotel and that below. This condition is largely controlled by the quality of water in Merced River. Above Sentinel Hotel the river is regarded as unpolluted and the campers are accustomed to use the water for drinking purposes. Below this hotel the water is grossly polluted and the superintendent of the park very properly refused to permit campers to occupy any of the sites along the lower portion of the valley. There is little

water during the camping season except that from the Merced. There are many excellent camp sites in the lower end of the valley, fully as attractive as those in the upper end; yet, under the present conditions, they will continue to be unavailable.

It will be impossible to exclude polluting substances from Merced River after it reaches the valley camps. This is especially true of that part below Sentinel Hotel and the surrounding village. A large amount of sewage must be discharged from these buildings, and, although it is possible to introduce sewage-purification systems which will render the effluent nonputrescible and chemically satisfactory, these systems furnish no absolute safeguard against the escape into the river of disease germs that may be in the sewage. Such escape would surely occur occasionally and it is these occasional pollutions of water supplies that have caused the greatest and most explosive outbreaks of typhoid fever that have occurred in the United States.

Above Sentinel Hotel there is no direct pollution; nevertheless, the water can not be regarded as fit for human consumption at all times. Wherever people congregate in large or small numbers it may be regarded as certain that there will be incidental and sometimes surreptitious pollutions that can not be guarded against and that are the result of thoughtlessness or intent. In addition to this, the drainage from occupied land into the river can not be regarded as at all times safe. Therefore, my first recommendation is that no attempt be made to retain Merced River in its pristine purity, and that, while sewage-purification systems should be installed so that the river will not become foul, no dependence should be placed on this part of the river as a source of water supply. It is therefore recommended that a new water supply system be installed, the specifications concerning which are given in the following paragraphs:

SEWAGE DISPOSAL.

The present methods of sewage disposal in the public camps seem to be fairly satisfactory. This is largely due to the diligence of the superintendent. With the increase of travel in the valley and the occupation of new camp sites, and especially if water supplies are conducted to these sites, special provisions should be made for taking care of the sewage. Each site should be provided with an improved form of sink and drain, the proper use of which should be enforced.

The sewage-disposal system at Camp Yosemite is sufficient for the present needs. It is a broad irrigation system which will probably give satisfaction for a few years. The ground upon which the sewage is now turned is not the best that could be desired, but, so long as it works with the present satisfaction, I recommend that no change be made.

The sewage-disposal system at Camp Curry is quite unsatisfactory. Certain references were made to this in a preliminary report, and a recommendation was made that the proprietor of this camp be allowed to retain his concession provided he limits the capacity of his camp to 200 guests and installs a sewerage system in accordance with instructions. I recommend in this case that a line of pipe be laid from the various receptacles in the camp across the road and terminate in the orchard which is now a part of the Coffman and Kenney concession. This ground is well suited for subirrigation, and a series of distribution pipes should be laid so that the effluent from the camp will be distributed over a wide area. The pipe from the camp should lead into a small, tightly cemented cesspool, from near the top of which the distribution system should run. This will provide retention for the solid matter in the sewage and only the overflow or liquid matter will be distributed into the ground.

A similar arrangement should be made for the group of buildings in the section known as Kenneyville and for such other sections as from time to time grow up in the valley.

The main village, the nucleus of which is Sentinel Hotel, should be provided with a main intercepting sewer of a diameter of 8 inches, which shall conduct all the sewage down along the river bank to a point at which there is a suitable area for the construction of a septic tank in which the sewage can be partially purified before it is discharged into the river.

No special directions can be given concerning the details of the various sewerage systems above recommended. The construction should be in charge of a competent person, and the work should be done at the expense of the concessioners. The adaptability of any particular system of sewage disposal depends on local conditions, and wherever small systems are installed, like

those above recommended, the details of construction must be varied according to these conditions. I respectfully submit as an appendix to this report some detailed specifications concerning the sewage-disposal system proposed at Curry Camp, which is the most urgent at the present time. In view of the expense and the uncertainties attached to the sewage-disposal system at the main village and the present fairly satisfactory conditions there, I recommended that the consideration of this matter be postponed for another year. Other improvements hereinafter recommended will occupy the entire attention of the Yosemite Valley administration and will consume all the money that Congress can be expected to provide.

WATER-SUPPLY SYSTEM.

The main water supply of the valley has been discussed above and it has been suggested that an artificial system be installed and so extended that it can be used at the various public camps in the valley as well as by the concessioners.

The water supply now delivered in pipes to certain concessioners in Yosemite Valley is derived from a spring at the foot of Glacier Point. The distribution system is inadequate in every way, and the pipe materal is of the cheapest sort and is rapidly deteriorating. The system requires constant supervision and numerous repairs. The quality of this water is above reproach, but even now it is taxed beyond the limit of capacity. It has been found necessary to provide an auxiliary by tapping the power pipe line running to the electric light station. With the great increase of camping in the valley and the consequent extension of the distribution system this supply will be quite insufficient. I recommend that a new supply be installed, the source of which shall be Merced River up above the valley and near the point of the present intake of the power house. The river above this point, and in fact the entire drainage area, can be maintained in sanitary condition. Campers can be excluded and the whole situation will be ideal for the conservation of purity.

The proposal to install a new water supply involves other considerations immediately related thereto, and which can not well be considered separately. These matters relate to the present power plant and appurtenances, together with the water-distribution system in the valley. The condition of the pipe line leading from the intakes to the power plant has been described in a preliminary report. It is in a precarious condition and liable to be totally disabled at any time. It will be necessary to install a new pipe line if the electric light plant is to be maintained. In installing this new pipe line it will be advisable to make it of a capacity sufficient to produce twice the amount of power now afforded at the station. This additional power will be needed in a short time, as the capacity of the generators does not greatly exceed present demands. In addition to this, the new pipe should be made large enough to supply to the valley a maximum of 1,000,000 gallons of water per day. This is a considerably greater amount of water than is needed for domestic consumption in the valley except during the heaviest tourist season, which obviously covers only a few weeks of each year. Nevertheless the heaviest demands should be satisfied. The main purpose, however, of so large a supply is fire protection. This is especially necessary. Its usefulness would not be confined merely to subduing fires in buildings now erected in the valley, but, if the system were properly installed, it would be extremely useful in quenching incipient forest fires, which, as you are well aware, are exceedingly serious in that part of the country. This would involve the purchase and maintenance of several hose reels equipped with long lines of fire hose.

Pipe lines.—No instrumental surveys were made at the time of my visit to the valley, and therefore the estimates hereinafter given are not based on precise measurements. Distances were measured principally by foot traverse and by scaling the new Yosemite Valley topographic sheet recently made by the Geological Survey. Liberal factors of safety have been allowed. It is recommended that the new pipe line be taken out of the river about 400 feet south of the present intake, that is, farther up the river, and be conducted to the power house by a new route, which is for many reasons far better than that now used by the present pipe line. The approximate distance along this route to the power house is 3,000 feet. The construction of a new road from the power house to the intake point is involved in this project. Along this route could be provided a suitable grade for the new pipe line. Such an improvement would cost not over $4,500. It will be necessary in any event to construct a road over which to transport materials of construction, and the additional expense involved in making a permanent highway will be small.

If a single pipe line is laid it should be 30 inches in diameter. In many respects it would be better to install two pipe lines 21 inches in diameter. The first cost would be greater if the smaller pipes were laid, but they would be far easier and less expensive to transport and handle, and there would be the additional advantage that if one of the lines were disabled the water supply would not be completely cut off. It may be stated in passing that the transportation charges constitute an unusually heavy proportion of the expense, the prevailing rate from San Francisco to the valley being $0.015 per pound. The pipe should be of wrought iron or steel, coated with tar, asphaltum, or similar material to provide against corrosion. The weight of 30 inches of spiral riveted pipe would be 79 pounds per linear foot, or about 120 tons; and if provided in 15-foot lengths, would consist of about 200 pieces. I estimate the cost of this pipe, including transportation charges and laying, as follows:

3,000 feet wrought-iron pipe, 30-inch, at $7.56 f. o. b. San Francisco, Cal	$22,600
Freight on 240,000 pounds above pipe, from San Francisco to Yosemite Valley, at $0.015 [a]	3,600
Excavation and laying, at $2 per foot [b]	6,000
Four 15-inch valves, two low-pressure for head of lines, and two high-pressure for foot of lines, including transportation and installation	800
Engineering, contingencies, etc., 15 per cent	5,000
Total	38,000

In addition to the above, there should be constructed a low dam, consisting of very heavy stone laid across the narrow part of the channel just below the proposed intake, so that a sufficient head may be retained on the intake during seasons of low water. This need not be a tight dam, but may be constructed by placing heavy bowlders in the river to provide a partial obstruction of the channel and thereby increase the stage. This would cost about $1,500.

About 15 yards of concrete construction would be necessary for retaining walls and forebay, which, at $8 per cubic yard, would cost $1,200.

The total estimate for the pipe line is therefore about $40,000.

Whether or not the remainder of the improvements herein proposed are provided for during the next season, this pipe-line improvement should be insisted upon. The conditions there at the present time are grave.

Distribution system.—There is recommended a distribution system consisting of 6-inch and 3-inch mains laid along the route shown on accompanying map. The route marked in black indicates 6-inch pipe, while that marked in red indicates 3-inch pipe. There is proposed in all about 33,700 feet of 6-inch pipe, the total cost of which, including materials and laying and exclusive of freight and transportation charges, would be $30,330. There would also be necessary 54,800 feet of 3-inch pipe, the total cost of which, on the same basis, would be $43,840. The distribution system would have to be supplied with gates, as marked on the map. Those proposed consist of twenty 6-inch gates, which, at $15 each, would cost $300; and twenty 3-inch gates, which, at $5 each, would cost $100. The total charge for pipe, laying, gates, including transportation, is estimated as follows:

Pipe system [c]	$74,170
Fire hydrants	8,500
Gates	400
Engineering, contingencies, etc	12,500
Freight from San Francisco [d]	26,800
Total	122,370

[a] Could be greatly decreased by using United States teams from El Portal.

[b] Based on costs at Philadelphia, which involved deep trenches and back filling. Pipe now under consideration would lie mostly on surface of ground, with very little trenching. No deduction made from rates (Philadelphia) on this account, and factor of safety is thereby afforded.

[c] This does not include cost of fittings, such as bends, Y's, elbows, etc., but the cost of laying here included is based on experience at Washington, D. C., where there is deep trenching. The system at Yosemite would lie close to the surface and, therefore, the cost of trenching would be nominal; the balance would more than provide for cost of fittings.

[d] Could be greatly decreased by using United States teams from El Portal.

It will be noted from the above that no provision is made for taps and local connections. This has purposely been omitted from the present estimate for two reasons: First, it will not be possible to put the new water-supply system into commission during the next season, and therefore an estimate of the tap and connections is not an immediate necessity; second, before making such an estimate it would be necessary to consider all the local conditions in connection with the needs for taps, etc. This largely depends upon the future policy with reference to the maintenance of camps and permanent improvements now erected or to be erected in the valley.

If it is proposed to open up the camp sites below Sentinel Hotel for occupancy, the entire system above proposed will be necessary. If, however, it is believed unwise to make a request for the total appropriation at the present time, certain portions of the system can be judiciously omitted and the cost thereby reduced. It will be noted upon examintion of the map that the proposed distribution system provides for cross-distribution, so that if any particular length of line is ever disabled the supply will not be cut off, but will be continued through the several by-passes. It would be possible, for example, to omit the 3-inch main running along the north side of the river from the present military post to El Capitan Bridge, and provide for the development of the camp sites only on the south side of the river at the present time. The 6-inch main, running on the south side of the river from the power house to Sentinel Hotel, could be omitted and the local usage on that side could be supplied with branches running across the river to such places as Curry Camp, Le Conte Memorial, etc. If it is believed wise to develop the system in this way, I shall be pleased to submit estimates of the proposed cost.

It is respectfully suggested that, in the event that it shall be deemed unwise to request an appropriation covering the entire improvement, an estimate be made of the cost of a new pipe line and a small additional sum to provide for proper instrumental surveys, and a minute consideration of the distribution system. This would involve a request for an appropriation of $42,000. In addition to this, it is recommended that the sum of $3,000 be included for survey of reservoir sites on Yosemite and Bridal Veil creeks, and for estimate of cost of building reservoirs to supply water for Yosemite and Bridal Veil falls during the summer season, when said falls are usually dry. It is strongly recommended that no camping be allowed in the vicinity of or above Mirror Lake. This body of water should be kept free from pollution, as it provides an excellent source of ice supply for the valley.

A system of garbage removal is recommended, the same to be conducted by the federal authorities during the camping seasons, with strict regulations concerning the administration of the same, and, if possible, proper charges should be made to the campers for maintenance thereof.

Very respectfully,

M. O. LEIGHTON,
Chief Hydrographer.

Approved:
H. C. RIZER,
Acting Director.

To the Honorable the SECRETARY OF THE INTERIOR.

APPENDIX C.

POWER PLANT.

YOSEMITE, *September 24, 1908.*

SIR: By the consent of Maj. H. C. Benson, superintendent in charge, I respectfully submit this report regarding the condition of our electric plant and water-power system. The feed pipe is 2,250 feet long, 22 inches in diameter, of about No. 16 sheet-iron pipe, riveted together on seams, and pressed together at joints. The gauge pressure at nozzles is 65 to 70 pounds per square inch. The headgate consists of a flimsy wooden affair, raised and lowered by crowbars. This headgate is set at the lower end of an open forebay, which is about 75 feet in length, which is a regular trap for snow and ice in winter, and for drift, sand, and leaves in summer.

The feed pipe enters a tunnel 200 feet in length just below the headgate. The tunnel was cut through broken up surface formation consisting of bowlders and earth, liable to shift at any time; in fact, a part of the tunnel is now caved in on the pipe. This took place while the State still had charge here. After the department took charge, we entered the tunnel and retimbered where it was badly needed and drove lagging between the pipe and ground at the cave, finding it impossible on account of the condition of the surrounding ground to remove the earth resting on the pipe and to retimber. In the electric plant we have two generators connected with two water wheels. The foundations are very poor, being all of wood set on the ground, then filled in around with concrete, which extends down only about 2 inches from the top of mud sills. This allows a great deal of vibration, although we have braced every way we could to prevent it, yet as long as the foundations are in their present condition it will continue and cause unsatisfactory operation. The high tension wiring in the station is laid in shallow wooden gutters resting on the ground under the floor and is supported on porcelain knobs. In fact, the wiring of buildings throughout the valley was originally done in a dangerous and unworkmanlike manner; we are overcoming this danger, however, by rewiring the buildings, more than half of which was completed last winter, and the balance can probably be done this fall and winter.

I would respectfully recommend a new electric plant and water-power system for the Yosemite Valley, with a capacity of 250 or 300 horsepower, as all future wants would thus be provided for. The capacity of the present plant will soon be taxed should we have a call for more lights, which we no doubt will, even if every part of the system were in first-class condition. As the load increases the strain on the plant also increases, and sooner or later, under the present conditions, there will be a breakdown.

With a new plant of larger capacity we could run twenty-four-hour service, thus providing electric power to consumers for heating, culinary purposes, and in any place where heat or power is used. This would greatly increase the income from the plant. The water power could be obtained without detracting from the beauty of the waterfalls, etc., and the tunnel mentioned could be eliminated from the new line, as it would be less expensive to run around the hill than to fix up the tunnel. I would also recommend that the supply cables be run in an underground conduit. The poles the State put in will soon have to be renewed; some of them are pretty badly decayed now. With the underground system this expense would be overcome, as from time to time the poles will all have to be renewed, since this locality causes poles to decay quite rapidly. Also we would thus do away with unsightly pole lines running through the park.

Very respectfully,

C. W. TUCKER,
Chief Electrician.

SECRETARY OF THE INTERIOR,
Washington, D. C.

APPENDIX D.

RULES AND REGULATIONS.

REGULATIONS OF FEBRUARY 29, 1908.

The following rules and regulations for the government of the Yosemite National Park, including the Yosemite Valley and Mariposa Big Tree Grove, are hereby established and made public, pursuant to authority conferred by the acts of Congress approved October 1, 1890, February 7, 1905, and June 11, 1906:

1. It is forbidden to injure or disturb in any manner any of the mineral deposits, national curiosities, or wonders on the government lands within the park.

2. It is forbidden to cut or injure any timber growing on the park lands, or to deface or injure any government property. Camping parties will be allowed to use dead or fallen timber for fuel.

3. Fires should be lighted only when necessary and completely extinguished when not longer required. The utmost care must be exercised at all times to avoid setting fire to the timber and grass.

4. Hunting or killing, wounding or capturing any bird or wild animal on the park lands, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed on the park lands under other circumstances than prescribed above, will be taken up by the superintendent and held subject to the order of the Secretary of the Interior, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof.

5. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line is prohibited. Fishing for purposes of merchandise or profit is forbidden. Fishing may be prohibited by order of the superintendent in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

6. No person will be permitted to reside permanently, engage in any business, or erect buildings, etc., upon the government lands in the park, without permission, in writing, from the Secretary of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion. No pack trains will be allowed in the park unless in charge of a duly registered guide.

7. Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; such lands, however, shall have the metes and bounds thereof so marked and defined that they may be readily distinguished from the park lands. Stock may be taken over the park lands to patented lands with the written permission and under the supervision of the superintendent.

8. The herding or grazing of loose stock or cattle of any kind on the government lands in the park, as well as the driving of such stock over the same, is strictly forbidden, except in such cases where authority therefor is granted by the superintendent.

9. No drinking saloon or barroom will be permitted upon government lands in the park.

10. Private notices or advertisements shall not be posted or displayed on the government lands within the reservation, except such as may be necessary for the convenience and guidance of the public.

11. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who may violate any of the foregoing rules, will be summarily removed from the park and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

No lessee or licensee shall retain in his employ any person whose presence in the park shall be deemed and declared by the superintendent to be subversive of the good order and management of the reservation.

12. The superintendent designated by the Secretary is hereby authorized and directed to remove all trespassers from the government lands in the park and enforce these rules and regulations and all the provisions of the acts of Congress aforesaid.

INSTRUCTIONS OF FEBRUARY 29, 1908.

1. Interference with or molestation of any bear or other wild animal in the park in any way by any person not authorized by the superintendent is prohibited.

2. *Fires.*—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. Where fires are built in the neighborhood of decayed logs, particular attention must be directed to the extinguishment of fires in the decaying mold. Fire may be extinguished where water is not available by a complete covering of earth

well packed down. Care should be taken that no lighted match, cigar, or cigarette is dropped in any grass, twigs, leaves, or tree mold.

3. *Camps.*—No camp will be made except at designated localities. All campers in Yosemite Valley shall first report at the office of the superintendent for assignment to camping sites, and will not change camps without permission, nor shall fires be lighted in Yosemite Valley or Mariposa Big Tree Grove without the express permission of the superintendent. Blankets, clothing, hammocks, or any other article liable to frighten teams must not be hung near the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Many successive parties camp on the same sites during the season, and camp grounds must be thoroughly cleaned before they are abandoned. Tin cans must be flattened, and with bottles, cast-off clothing, and all other débris must be deposited in a pit provided for the purpose. When camps are made in unusual places where pits may not be provided, all refuse must be hidden where it will not be offensive to the eye.

4. *Bicycles.*—The greatest care must be exercised by persons using bicycles. On meeting a team the rider must stop and stand at side of road between the bicycle and the team—the outer side of the road if on a grade or curve. In passing a team from the rear the rider should learn from the driver if his horses are liable to frighten, in which case the driver should halt and the rider dismount and walk past, keeping between the bicycle and the team.

5. *Fishing.*—All fish less than 6 inches in length should at once be returned to the water with the least damage possible to the fish. No one person shall catch more than 50 fish in one day.

6. *Dogs.*—Dogs are not permitted in the park.

7. *Stages.*—Stages entering Yosemite Valley shall stop at each hotel or permanent camp in the order of location, so that passengers may exercise the right of selection.

8. *Driving on roads of park.*—(*a*) Drivers of vehicles of any description when overtaken by other vehicles traveling at a faster rate of speed shall, if requested to do so, turn out and give the latter free and unobstructed passageway.

(*b*) Vehicles, in passing each other, must give full half of the roadway. This applies to freight outfits as well as any other.

(*c*) Freight, baggage, and heavy camping outfits on sidehill grades throughout the park will take the outer side of the road while being passed by passenger vehicles in either direction.

(*d*) Transportation companies, freight and wood contractors, and all other parties and persons using the park roads will be held liable for violations of these instructions.

(*e*) Mounted men on meeting a passenger team on a grade will halt on the outer side until the team passes. When approaching a passenger team from the rear warning must be given, and no faster gait will be taken than is necessary to make the passage, and if on a grade the passage will be on the outer side. A passenger team must not be passed on a dangerous grade.

(*f*) All wagons used in hauling heavy freight over the park roads must have tires not less than 4 inches in width. This order does not apply to express freight hauled in light spring wagons with single teams.

9. *Miscellaneous.*—Automobiles are not permitted in the park.

No person shall drive or ride faster than a walk over any of the government bridges within the park.

Persons with animals using trails must keep therein; leaving the trails for the purpose of making short cuts will not be permitted.

Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

Campers and all others, save those holding license from the Secretary of the Interior, are prohibited from hiring their horses, trappings, or vehicles to tourists or visitors in the park.

All complaints by tourists and others as to service, etc., rendered in the reservation should be made to the superintendent in writing before the complainant leaves the park.

10. The penalty for disregard of these instructions is summary ejection from the park.

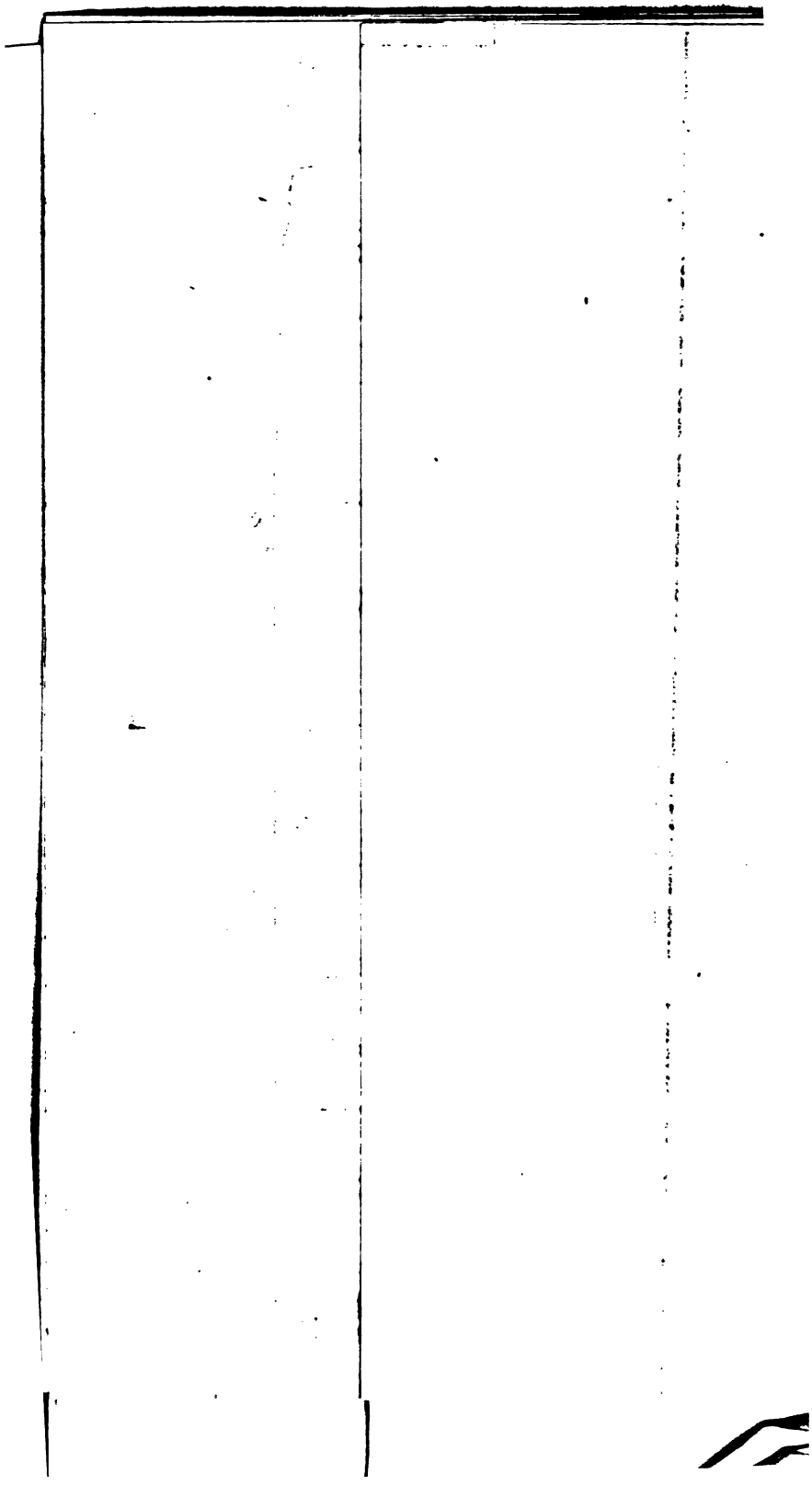
REGULATIONS OF FEBRUARY 29, 1908, GOVERNING THE IMPOUNDING AND DISPOSITION OF LOOSE LIVE STOCK.

Horses, cattle, or other domestic live stock running at large or being herded or grazed in the Yosemite National Park without authority from the Secretary of the Interior will be taken up and impounded by the superintendent, who will at once give notice thereof to the owner, if known. If the owner is not known, notice of such impounding, giving a description of the animal or animals, with the brands thereon, will be posted in six public places inside the park and in two public places outside the park. Any owner of an animal thus impounded may, at any time before the sale thereof, reclaim the same upon proving ownership and paying the cost of notice and all expenses incident to the taking up and detention of such animal, including the cost of feeding and caring for the same. If any animal thus impounded shall not be reclaimed within thirty days from notice to the owner or from the date of posting notices, it shall be sold at public auction at such time and place as may be fixed by the superintendent after ten days' notice, to be given by posting notices in six public places in the park and two public places outside the park, and by mailing to the owner, if known, a copy thereof.

All money received from the sale of such animals and remaining after the payment of all expenses incident to the taking up, impounding, and selling thereof, shall be carefully retained by the superintendent in a separate fund for a period of six months, during which time the net proceeds from the sale of any animal may be claimed by and paid to the owner upon the presentation of satisfactory proof of ownership, and if not so claimed within six months from the date of sale such proceeds shall be turned into the Yosemite National Park fund.

The superintendent shall keep a record in which shall be set down a description of all animals impounded, giving the brands found on them, the date and locality of the taking up, the date of all notices and manner in which they were given, the date of sale, the name and address of the purchaser, the amount for which each animal was sold and the cost incurred in connection therewith, and the disposition of the proceeds.

The superintendent will, in each instance, make every reasonable effort to ascertain the owner of animals impounded and to give actual notice thereof to such owner.



T.4 S.

REPORT OF THE ACTING SUPERINTENDENT OF THE SEQUOIA AND GENERAL GRANT NATIONAL PARKS.

REPORT OF THE ACTING SUPERINTENDENT OF THE SEQUOIA AND GENERAL GRANT NATIONAL PARKS.

OFFICE OF THE ACTING SUPERINTENDENT,
CAMP SEQUOIA, CAL.,
September 15, 1908.

SIR: I have the honor to submit a report relative to the condition of affairs in and the management of the Sequoia and General Grant National Parks during the season of 1908.

SEQUOIA NATIONAL PARK.

Sequoia Park is located in Tulare County, Cal., and has an area of about 250 square miles, or 160,000 acres; it lies 300 miles southeast of San Francisco, and may be reached via the Southern Pacific Railroad to Visalia; thence via the Visalia Electric Railway Company to Lemon Cove, and by stage from that point to the Giant Forest, the Mecca of all visitors who come to see the "big trees." The park was set aside by the act of September 25, 1890 (26 Stat., 478), supplemented by the act of October 1, 1890 (26 Stat., 650), and placed under the control of the Secretary of the Interior.

The above area comprises approximately 87,160 acres of magnificent merchantable timber, 57,768 acres of woodland (firewood), 5,760 acres of grass land, and 9,312 acres of desert land. The local names of lumber trees in the order of predominance are white fir, sugar pine, yellow pine, sequoia, Jeffry pine, red fir, cedar, foxtail pine, silver pine, white pine, and juniper; of firewood trees, oak, juniper, willow, cottonwood, red alder, sycamore, maple, ash, white pine, mahogany, red bud, false elm, nutmeg, laurel, and buckeye. The average number of board feet per acre in the merchantable timber is 32,000, and each acre of woodland is estimated to produce 22 cords of wood.

In addition to the interesting points shown on the tabulated statement with this report there are many places of note outside the park, among which may be mentioned the Kern and Kings River canyons, Farewell Gap, Mount Vanderver, Mineral King, Sawtooth Peak, and Moose Lake. Inside the park, but not yet accessible by either road or trail, are many places which one given to exploring would be glad to visit, such as Big Baldy, Little Baldy, Castle Rocks, Mount Silliman, Marble Cave, Panther Creek, Dennison Mountain, Homers Nose, and others.

GENERAL GRANT NATIONAL PARK.

This park, which lies northwest of Sequoia Park, one-half in Tulare County and the other half in Fresno County, Cal., has an area of 4 square miles. The distance from Camp Sequoia, in Sequoia National Park, to the ranger's cabin, in the center of General Grant National Park, is 35 miles, but the distance between the boundaries of

the two reservations is probably not more than 8 miles by trail. The park is 60 miles from Visalia, on both the Southern Pacific and Santa Fe lines, and is best reached by wagon road from Sanger, on the Southern Pacific Railroad. The main attraction is the grove of great sequoia trees, including the "General Grant," which is surpassed in size only by the "General Sherman" tree, in Sequoia Park, and on account of its accessibility has become the favorite camping place, in summer, of many people of the San Joaquin Valley.

The park was set aside by the act of October 1, 1890 (26 Stat., 650), and placed under the control of the Secretary of the Interior, in the same manner as Sequoia Park.

GUARDING THE PARKS.

Upon the request of the Secretary of the Interior to the War Department, and pursuant to G. O., No. 56, Headquarters Department of California, Troop G, Fourteenth Cavalry, with medical officer and hospital corps detachment (3 officers and 57 enlisted men), left the Presidio of San Francisco, on May 12, 1908, en route for the Sequoia National Park, reached Kaweah on the 25th of the month, and the march was resumed again on May 30 to this camp. I was compelled to leave the troop at Fresno while en route, and Second Lieut. N. H. Davis took command until my return to the parks June 26, and performed the duties of acting superintendent during such period.

On May 1, 1908, prior to leaving the Presidio, a long and comprehensive troop order was issued. This is mentioned, as that order, among other things, designated the camp site of the troops, as in previous years, at Camp Sequoia, on Sequoia Creek, 2 miles west of the Giant Forest. The outposts were designated as follows: No. 1, at Rocky Gulch; No. 2, Cloughs Cave; No. 3, Cold Springs; No. 4, Atwells Mill; No. 5, Buck Canyon, and No. 6, General Grant Park. They were the same as those heretofore occupied, and guarded all the main entrances to the parks. The outposts were changed once a month, in order to give the men a knowledge of the country and to eliminate, as much as possible, the element of sameness from the work.

The duty of the troops is to preserve and protect the trees, plants, birds, animals, fishes, mineral deposits, and natural curiosities, to prevent forest fires and the unauthorized use of government lands by trespassers and by cattle and sheep. Firearms are permitted in the reservations only by written permission of the superintendent, and must be sealed, except those of the troops and rangers. Particular attention is paid to seeing that fires of camping parties are completely extinguished when camps are vacated. Trespassers and persons who misbehave, or who fail to observe the rules and regulations, are summarily ejected from the parks.

Some member of each of the detachments posted as above stated made a daily patrol of from 12 to 15 miles, and from questioning tourists, the park rangers, and making frequent inspections I am convinced that these patrols were actually and conscientiously performed. The following is the mileage covered by the different outpost detachments during the season: General Grant Park, 1,128 miles; Buck Canyon, 1,132 miles; Rocky Gulch, 1,200 miles; Cold Springs, 1,236 miles; Atwells Mill, 1,236 miles, and Cloughs Cave, 1,224 miles. The total of 7,156 miles covers routine work and not *messenger* service and unforeseen rides.

GENERAL CONDITIONS.

Tourists begin to come into the parks about June 15, subsequent to the repair work on roads and trails. This gives ample time for a thorough inspection by the officer in charge of mail coaches, pleasure vehicles, etc., used by Messrs. Broder & Hopping in the transportation of passengers, under the provisions of their contract with the department. The camp site of Broder & Hopping should also be inspected at this stage and put into shape for incoming visitors. A like inspection, and cleaning up, if need be, should be made of all camping places along the Giant Forest road and prominent trails. It is recommended that parties repairing the roads and trails next season be required, as they reach the old camp sites above mentioned, to dig pits and bury all refuse found, and at the same time post sanitary notices. A contingent fund in the hands of the acting superintendent, for the temporary employment of men to clean up paper, lunch boxes, bottles, etc., of picnicking parties along roads and trails, would greatly improve conditions.

PARK REGULATIONS.

The tourists in general are inclined to observe the park rules and regulations, but now and then there are some exceptions. During the present season there have been 3 ejectments—two of individuals and one of a family, and 2 rifles were taken up for retention till the end of the season, the owners having tampered with the seals. It is hoped the sealing of firearms will not be discontinued in these reservations. The present practice of sealing arms and permitting the owners to carry them into or through the parks without other hindrance, as long as the seals are not tampered with, seems to work very satisfactorily.

FOREST FIRES.

Several fires occurred during the season, all small and doing little damage, save one near the Mount Whitney Power Company's plant. This was outside of the park boundaries, but so close that men of this command were sent to assist in fighting it; the fire lasted four days—from July 18 to 21, inclusive—burned over 2,500 acres, and the loss to the company was about $1,000. Damage to the parks from forest fires has been but $150 since their creation—a remarkable showing.

GAME.

Mountain lions, wildcats, wolves, and coyotes are troublesome, and rangers and soldiers have orders to exterminate them wherever found. Rattlesnakes, the wolverine, porcupine, skunk, and hawk should be added to the above list.

Deer are numerous and very gentle; small bands of 4 and 5 (and once 7) were frequently seen in camp during the season. Park rangers and old timers who live in the vicinity state that it takes, on an average, 2 deer a week for a mountain lion's larder, and a pack of hounds would materially assist in the extermination of the latter. Bear are numerous in Sequoia Park, and their tracks along the Giant Forest road—big, little, and middle sized—would indicate an increase in this interesting family. Quail are numerous, but grouse scarce. Squirrels, both of the gray and Douglas varieties, as well as foxes, chipmunks, and woodchucks, are plentiful.

In 1905 a small herd of elk, 16 in number, was put in what is called the "elk park," near the center of the Sequoia Park, and are said to be increasing. This inclosure is a fine grazing tract, and could easily support, both as to feed and running area, many more animals of the ruminant tribe. It contains 40 square miles, and varies in elevation from 1,000 to 7,000 feet, with ideal climatic conditions. It is therefore recommended that Congress be asked for an appropriation of $10,000 for the purchase and installation of a herd of buffalo. Salt should be provided for deer and elk.

The park rangers are deputy game wardens of the State of California, and as such are in a position to bring offenders against the state game laws to justice in nearly every instance.

FISH AND FISHING.

Although no fish have been planted this season by the troops, I understand that the California state fish commission has, upon requisition of the Visalia Sportsman Club, supplied 80,000 rainbow and 20,000 eastern brook trout, which were successfully liberated in the parks by the rangers. There are myriads of tiny trout in several of the streams, largely due to the number planted by my predecessor, Capt. Kirby Walker, last year, and fishing is excellent. It is particularly good around Hocketts Meadow, Quinn's Horse camp and Cabin Meadow country; five gentlemen and one lady personally known to me caught, on August 20, 22, and 24, a total of 242 trout, some of which were 14 inches long and the majority about 10 inches.

DRIVING LIVE STOCK THROUGH PARKS.

During the present season two herds of cattle have, with permission of the acting superintendent, passed through the Sequoia Park, and none through General Grant Park. The first herd passed over the Mineral King road from west to east July 6 and 7; the second, early in September, passed through the southeastern township from east to west. No sheep have been in the reservations this year.

BIG TREES AND OTHER NATURAL FEATURES.

The big trees rank first among the natural features of the parks; they are found only in the south central portion of California, and grow in a peculiar red soil at an altitude of from 5,000 to 7,500 feet, varying in size, according to age, from saplings to trees with a diameter of 36 feet, and sometimes 300 feet in height. They are fitted by nature for almost everlasting life and are remarkably tenacious of existence; many may be seen burned almost through at the base and still flourishing at the top.

The "General Sherman" tree, in Sequoia National Park, has the reputation of being the largest tree in the world; the second in size being the "General Grant" tree, 34 feet in diameter and 107 feet in circumference. I have seen 10 groves of sequoias, of which 7 are in these reservations. The Giant Forest grove contains a half million of trees, of which 5,000 or more are over 15 feet in diameter. The next grove, in order of importance, is the one on the South Fork of the Kaweah River, the third at Atwell's Mill. Other groves are somewhat smaller.

There are many interesting mountain peaks, the most popular and accessible crag being Moro Rock. A trail this year completed to Twin Lakes has opened up travel to many beautiful lakes; Twin Lakes are 9,200 feet above sea level, with areas of 20 and 3 acres. Lake Evelyn has an elevation of 10,000 feet and Hockett's Lake 8,500 feet. I recommend the extension of the boundaries of the parks by Congress to include Sequoia Lake, just outside of General Grant Park, and picturesque mountain peaks and waterfalls surrounding Sequoia Park. Farewell Gap is a typical pass, at an elevation of 10,000 feet. On August 28 the writer and a detachment went through 10 feet of snow at this pass. The meadows, which are numerous and extensive, are considered ideal as camping spots, although they are little used at the present time.

The caves in order of importance are Paradise, Clough's, Marble, and Palmer's, all in the limestone belt of Sequoia Park. Paradise Cave was discovered in 1901, and on account of the difficulty of access (by a long, tortuous, steep and makeshift road and trail), much exploration has yet to be undertaken. It is very large and has great possibilities for development. Money should be furnished next season for the development of this cave, for making a proper road and trail to it, and for an iron gate to keep out vandals, who are already working on its stalactites, stalagmites, and other beautiful features. Clough's Cave is readily accessible to the public, and has been visited by a number of persons the past season. Vandals are also at work here, and an iron gate is required.

In the following table are given the principal points of interest, including distances, directions, and manner of reaching from the Giant Forest:

Showing points of interest in Sequoia and General Grant national parks.

Name.	Distance.	Direction.	Road or trail.	Altitude.	Best means of reaching.	Remarks.
	Miles.			*Feet.*		
Camp Sequoia	2	SW.	Road	5,500	Horse or wagon.	Camp of United States troops.
Moro Rock	2	SE.	...do	6,710	...do	Magnificent view.
Crescent Meadow	1½	SE.	Trail	6,500	Horse	Pretty mountain meadow; good camping place.
Log Meadow	1½	SE.	...do	7,116	...do	Huge log once used as hunter's cabin, also chimney tree; good camping place.
Circle Meadow	1	E.	...do	6,700	...do	Huge hollow fallen log, 174 feet long, which can be walked through, also Wolverton's house tree; good camping place.
Long Meadow	3	NE.	...do	8,000	...do	Pretty mountain meadow; good camping place.
Sherman Tree	2	NE.	...do	7,210	...do	Largest tree in the world, 118 feet in circumference and 36 feet in diameter, 280 feet high.
Admiration Point	8	W.	Road and trail.	4,600	...do	Beautiful scenery. Precipitous cliff, 2,029 feet, can be looked over.
Marble Fork Bridge.	4	W.	Road	5,000	Wagon	Fine mountain stream and bridge. Good place for picnicking and bathing; fair fishing; good camping place.
Marble Fork (Twin Lakes Trail Crossing).	6	NE.	Trail	6,719	Trail	Beautiful scenery. Good place for picnicking; fair fishing; good camping place.
Wolverton's Cabin.	8	NE.	...do	7,500	Horse	Bowlder and log cabin used by old trapper and hunter named Wolverton prior to creation of park by Congress; fair fishing; good camping place.

Showing points of interest in Sequoia and General Grant national parks—Continued.

Name.	Distance.	Direction.	Road or trail.	Altitude.	Best means of reaching.	Remarks.
	Miles.			*Feet.*		
Cahoon Meadow	10	NE.	Trail	8,200	Horse	Fine mountain meadow. Excellent place for outing, as wood, grass, etc., is abundant; good camping place.
Twin Lakes	13	NE.	do	9,000	do	Deep mountain lake situated in granite pocket; one of the most interesting and beautiful sights in Sequoia Park; good camping place.
Alta Peak	10	E.	do	11,211	Horse and foot.	From this peak a better panoramic view may be obtained of the terrain of the Sequoia Park than from any other height.
Alta Meadow	9	E.	do	9,000	Horse	Fine scenery and good picnic ground; good camping place.
Buck Canyon	10	SE.	do	4,200	do	Deep mountain gorge—a fit place for mountaineers only to visit, as it is in extremely rough country.
Halstead Meadow	10	NW.	do	8,400	do	Fine mountain meadow. Good place for outing. Is on the route between Giant Forest road and General Grant Park; fair fishing; good camping place.
Dorst Creek	12	NW.	do	6,500	do	Fine mountain stream, 3 miles from magnificent Sequoia grove; good camping place.
Stony Creek	14½	NW.	do	6,500	do	Pretty mountain stream, with good, though small, grazing meadows in vicinity; good fishing; good camping place.
Bear Trap Meadow	16½	NW.	do	7,000	do	Fine meadow named from old log bear trap, which is still standing; good fishing; good camping place.
General Grant Park.	29	NW.	do	6,600	do	Contains the General Grant tree, one of the largest in the world, also the Fallen Monarch and others of interest; good camping place.
Paradise Cave	25	SW.	Road and trail.	5,800	Horse or wagon.	Large cave not yet fully explored. Contains many features full of interest, and very beautiful.
Oriole Lake	25	S.	do	5,700	do	Small, deep mountain lake surrounded by beautiful forest; fair fishing; good camping place.
Clough's Cave	44	S.	do	4,300	Horse	Interesting cave near camp of detachment of United States troops. Fine large spring of water at the camp; fair fishing; good camping place.
Hockett's Meadow	56	SE.	Trail	5,500	do	Fine mountain meadow, headquarters of park ranger. Hockett's Lake, Sand Meadow, and Mitchell's Meadow in immediate vicinity; excellent fishing; good camping place.
Lake Evelyn	56	SE.	do	8,000	do	Deep mountain lake, 3 miles from Hockett's Meadow. Contains some very large trout; fair fishing; good camping place.
Cabin Meadow	56	SE.	Road and trail.	8,750	do	Beautiful meadow, halfway between Hockett's Meadow and Quinn's Horse Camp; excellent fishing; good camping place.
Quinn's Horse Camp.	64	SE.	do	8,500	do	Headquarters of park ranger. Fine soda springs 1 mile from cabin. Lemonade of water from these springs tastes as though made of Apollinaris water; excellent fishing; good camping place.
Elk Park	15	S.	do	2,000	do	Section of Sequoia Park set aside for herd of elk, where these animals wander about undisturbed; excellent fishing; good camping place.
Hospital Rock	19	S.	do	3,000	do	Huge rock supposed to have been occupied by a prehistoric race. Numerous hieroglyphics painted on it; good fishing; good camping place.
Atwell's Mill	30	SE.	Trail	6,500	do	Small settlement and mill near camp of detachment of United States troops. Some huge Sequoia stumps may be seen here where trees were cut prior to creation of park; fair fishing; good camping place.

PATENTED LANDS.

The question of the Government's acquiring all private holdings in these parks to avoid troublesome questions of administration, which now arise frequently through the presence of this class of lands and as a means of protecting the big trees which may be located thereon, I notice from former reports has received the attention of the Department year after year. H. R. bill 11777 and Senate bill 7257, Sixtieth Congress, first session, brought the subject before Congress in substantially the same manner as in previous years, to provide a means of acquiring title and making appropriation to carry the same into effect, but the bills are still pending, although favorable reports have been made thereon several successive years by the department and the Public Lands Committee in one branch of Congress.

In the Sequoia National Park there are 3,716.96 acres of patented land, valued in 1903 at $70,734, and in the General Grant Park 160 acres, valued at $1,100. There is always the possibility of a strong corporation securing rights on these lands and seriously embarrassing the Government in its administration of the parks.

HEADQUARTERS CAMP.

With respect to a camping place for the troop doing duty in the parks, my choice would not be Camp Sequoia, although this camp has been occupied the entire season. Never having been in Sequoia Park before, the main camp was naturally selected in accordance with the ideas of my predecessors, and after selection it was not practicable to break up and move. The following reasons may be stated as to the advantages of Marble Fork over Sequoia Creek as a camp site: First, water supply never failing and bathing facilities good; at Camp Sequoia the water was very low this season, the stream used by officers dried up, and bathing facilities limited. Second, the water at Marble Fork and the small streams flowing into it at bridge come from high up in the mountains, running over huge rocks and bowlders, and is quite cold and pure; that at the present camp runs, in some places, through decaying vegetation, and is not as pure as it should be. Third, the terrain in the vicinity of the proposed camp is of such a nature as to prevent camping parties from getting above it on either of the streams, which is not the case at Camp Sequoia. Fourth, the proposed site would cut the hauling distance of supplies by 2 miles. Fifth, the latter is more open and exposed to the sunlight. Sixth, the character of the soil is such as to do away with the great amount of dust which now prevails at Camp Sequoia.

MILITARY POST.

For the sake of health, economy, administrative purposes, and comfort, neat, inexpensive frame buildings (log-cabin style would be better, as the material could be cut close at hand) should be built for the troops on the Marble Fork of the Kaweah River, at the point which I have favored for the new headquarters camp. These buildings should include quarters for officers and men, latrines, stables (sheds) for troop and quartermasters stock, storehouses, bath houses, and administration, bakery, and post-exchange buildings.

Although a storehouse and incinerator were put up this year at Camp Sequoia, the location is not the choice of the writer. The authority for their erection at the present site had been obtained theretofore, and as they were necessary and the advantages of the proposed headquarters camp on the Marble Fork were not then so apparent, no objection was made at the time. The view was also taken that such structures could later be moved without any great expense.

POST-OFFICE.

At the present time there is a post-office established at Broder & Hopping's camp during the summer months. For the convenience of the government (Interior and War Departments), troops on duty, employees, and tourists in the park, it is thought the post-office should be moved to the troop headquarters and made a money-order office, so that public business could be expedited at all times.

ACCOMMODATIONS.

There are no hotels in either park. In Sequoia National Park the firm of Broder & Hopping maintains, under contract with the department, a transportation and permanent camp service. The establishment is, in my opinion, very remote from first class. I believe the members of the firm are thoroughly honest and good people, but they do not seem to understand the proper running of a concern like a summer or mountain resort, as this is. They have a few cheap tents, a cook house, and dining cabin, and a small store, the group being called "Camp Sierra." A good many people from the country and the small towns of the San Joaquin Valley camp, on their own account, all about Camp Sierra, and make the sanitary conditions very bad. It must be understood that the establishment of Broder & Hopping is on patented land, the owner of which is not in sympathy with the rules and regulations of the Interior Department, thus making enforcement of sanitary rules difficult and embarrassing.

The magnificence of the Giant Forest, and the grandeur of the parks in general, makes it imperative that a hotel of the first class should be established at or near the place now occupied by Broder & Hopping.

TOURISTS.

Broder & Hopping this year carried through the Sequoia National Park 318 tourists; besides these, they accommodated at Camp Sierra 224; 300 more came in their own conveyances and camped in the Giant Forest independently of Broder & Hopping's establishment. The above total, 842, visited the big trees this season, and 409 visited other points in the park; grand total for Sequoia National Park, 1,251. Ranger L. L. Davis reports 1,773 persons as having visited the General Grant National Park during the season. These figures for the two parks compare favorably with the totals for 1907, which were 900 and 1,100, respectively.

ROADS AND TRAILS.

The Giant Forest and Mineral King roads admit of improvement by widening throughout, or at stated distances, for the safe passing of teams, and some treatment for minimizing the dust. If the

PARTLY DEFORESTED TRACT ON PATENTED LAND NEAR ATWELL'S MILL.

A. ATWELL'S MILL ON PATENTED LAND, SEQUOIA PARK.

B. MARBLE FORK BRIDGE ON GIANT FOREST ROAD.

BUENA VISTA POINT, GIANT FOREST ROAD.

history of the parks and their topograpgy, something of forestry, zoology, and ornithology, and be capable of handling laboring parties on road, trail, telephone, bridge, and building construction. These men, in the performance of their duties, travel on horseback from 3,000 to 6,000 miles a year, must face dangers, exposure, and the risk of being sworn into the penitentiary through the evil designs of others.

Mr. Fry, the chief ranger, who is also in charge of the parks most of the year, uses a typewriter, and does considerable clerical work for the Interior Department. Expenses of living are increasing, and men with similar qualifications in the Forest Service receive much higher compensation.

The cabins occupied by the rangers require painting outside, and should be made more homelike and comfortable inside. The erection of a stable or barn for each ranger would also be an improvement, and it is recommended that 4 or 5 acres of meadow land be fenced around cabins as pastures for their horses.

ACTING SUPERINTENDENT.

The acting superintendent has ample work to perform in the way of administration and the enforcement of the rules and regulations, which could be made a little more forceful than at present, and the supervision of road, trail, and other improvement work can very properly be delegated to the chief ranger, who has charge of such work when the troops are not in the parks. The latter, of course, should be accountable to the officer in charge during the tourist months. As a matter of information, it may be stated that the writer traveled a distance of 800 miles during the period of eighty days spent in the reservations. A clerk for the acting superintendent is required to properly handle the business of the office. A capable sergeant of my troop performed this work during the past season and was allowed pay by the department upon my recommendation.

MOUNT WHITNEY POWER COMPANY.

The Mount Whitney Power Company was granted a right of way, by contract with the department dated February 25, 1907, for the construction of flumes, ditches, etc., in the Sequoia National Park, to divert water from the middle fork of the Kaweah River, and convey it to a power house outside the reservation, for the purpose of generating electrical power for commercial purposes, in accordance with approved maps and field notes, a rental of 2½ per cent of the gross receipts to be exacted after the plant is completed and put in operation. The company, as part compensation, offered to build a $25,000 wagon road along the said right of way, and the portion heretofore constructed is good, although the work is progressing very slowly.

SANITATION.

This was one of the most important subjects that came to light this season, and the matter was at once taken up with the department. It was found that the two principal points frequented by tourists, Camp Sierra in the Giant Forest and the camp site at General Grant Park, were not only insanitary, but, on account of refuse lying about, most unpleasing to the eye.

Doctor Lincoln, the surgeon at headquarters, was ordered to make a sanitary inspection of these camps and report. These reports were forwarded to the department, and by order of the Secretary of the Interior a set of rules was formulated and issued by the acting superintendent. The sanitary rules formulated and posted at appropriate places were as follows:

CAMP SITES.

In selecting a camping ground it should be at a sufficient distance from the water source, stream, or spring not to be objectionable to those who may wish to camp in the neighborhood and use the same water source at the same time.

DISPOSAL OF KITCHEN REFUSE AND OTHER WASTE.

Kitchen refuse, cans, vegetable parings, and tops, bones, soiled and cast-off wearing apparel, boxes, paper, etc., should be buried or burned.

A pit at least 3 feet deep and of sufficient size to accommodate all such waste material must be dug and the daily quantity of material kept covered with earth in order that flies and an odor may not be present. The pit must be covered with earth to the surface level on the abandonment of the camping ground.

WATER SOURCE.

The washing of linen, bathing, or the casting of any objectionable material, such as cans, linen, soap, vegetables, or fruit coverings, etc., into a spring or water source or about its margins, which is used either in the immediate vicinity or below for human consumption, as well as the watering of animals above any camping site, is strictly prohibited.

ANIMALS.

All animals should be kept a sufficient distance from camping grounds not to litter the ground and make unfit for use the area which may be later used as tent sites. Animals should not be tethered near to or in the bed of any stream or spring, whether the same is running or dry. All animals must be watered below all camps adjacent to such stream or spring. Dogs must be kept tied and not allowed to swim in or otherwise soil the stream along which campers may be living. The placing of animal refuse or manure on camping or possible camping sites adjacent to streams or springs, or their dry runs, or on roads, is strictly forbidden. Dead animals must be buried at least one-fourth of a mile from the camping sites and at a sufficient depth not to be uncovered by bears and other animals.

LATRINES, SINKS, PRIVIES.

It is forbidden for anyone to soil or in any way write upon or mutilate any of the structures erected for public convenience. In places where such structures are not provided campers must make pits or sinks, in size 2 feet by 3 feet by 3 feet deep (larger and deeper if the number of individuals requires) and keep same covered daily with dry earth to prevent odor and presence of flies. These sinks must be well outside of individual and camp sites and a considerable distance from streams and springs, and on abandonment of the camp must be covered entirely with earth to at least the level of the surrounding surface.

ABANDONMENT OF CAMP.

On abandoning a camp all pits must be filled and all camp and kitchen refuse as mentioned above buried or burned and the ground left free from all objectionable material to the end that the site may be suitable for future pleasure seekers.

Troopers and rangers are instructed to see that these rules are strictly enforced.

ESTIMATES FOR FISCAL YEAR 1910.

SEQUOIA NATIONAL PARK.

Salaries of 3 park rangers, $4,000; construction of 40 miles of additional wagon road (at $4,000 per mile), $160,000; widening 21 miles of Giant Forest road to 18 feet (19 miles at $900 and 2 miles at $3,000), and providing drainage culverts (19 miles at $200),

$26,900; construction of 90 additional miles of trail (at $325 per mile) and improvements to existing trails, $31,250; telephone line, 40 additional miles (at $150 per mile), $6,000; miscellaneous, $6,050; total, $234,200.

GENERAL GRANT NATIONAL PARK.

Salary of 1 park ranger, $1,200; road construction, $1,250; water supply to campers' sites, $1,500; sanitary improvements, $700; for reforestation, $500; miscellaneous, $1,350; total, $6,500.

CONCLUSION.

My duty would not be properly performed if I did not thank the men of my troop, the park rangers, the foremen of road and trail working parties, and others in the vicinity of Three Rivers, for their cordial and spontaneous aid in connection with the park administration. Especially are thanks due First Lieut. H. F. Lincoln, Medical Reserve Corps, for his valuable assistance in sanitary measures; Mr. Walter Fry, chief park ranger, for his unselfishness and extreme loyalty in all cases; and to Sergt. C. O. McKinney, Troop G, who, as clerk in the office of the acting superintendent, labored intelligently and faithfully during the season.

Very respectfully,

C. C. SMITH,
Captain, Fourteenth Cavalry,
Acting Superintendent Sequoia and General Grant National Parks.

The SECRETARY OF THE INTERIOR.

RULES AND REGULATIONS.

SEQUOIA NATIONAL PARK.

General Regulations of March 30, 1907.

1. By act of Congress, approved September 25, 1890, the tract of land in the State of California described in township 18 south and ranges 30 and 31 east, and also sections 31, 32, 33, and 34, in township 17 south and range 30 east, and by act of Congress, approved October 1, 1890, the adjoining tract described as townships 15 and 16 south, ranges 29 and 30 east, and also township 17 south, range 30 east, except above-mentioned sections 31, 32, 33, and 34, have been set apart for a public park, and the same shall be known as the "SEQUOIA NATIONAL PARK."

2. The park by said act is placed under the exclusive control of the Secretary of the Interior, and these rules and regulations are made and published in pursuance of the duty imposed on him in regard thereto.

3. It is forbidden to injure or disturb in any manner, any of the mineral deposits, natural curiosities, or wonders, on the Government lands within the park.

4. It is forbidden to cut or injure any timber growing on the park lands. Camping parties will be allowed to use dead or fallen timber for fuel.

5. Fires shall be lighted only when necessary and completely extinguished when not longer required. The utmost care must be exercised at all times to avoid setting fire to the timber and grass.

6. Hunting or killing, wounding or capturing any bird or wild animal on the park lands, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed on the park lands under other circumstances than prescribed above, will be taken up by the superintendent and held subject to order of the Secretary of the Interior, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person, or persons, violating this regulation and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof.

7. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, is prohibited. Fishing for purposes of merchandise or profit is forbidden. Fishing may be prohibited by order of the superintendent of the park in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

8. No person will be permitted to reside permanently, or to engage in any business on the Government lands in the park without permission, in writing, from the Secretary of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the park unless in charge of a duly registered guide.

9. Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; such lands, however, shall have the metes and bounds thereof so marked and defined as that they may be readily distinguished from the park lands. Stock may be taken over the park lands to patented lands with the written permission and under the supervision of the superintendent.

10. The herding or grazing of loose stock or cattle of any kind on the Government lands in the park, as well as the driving of such stock or cattle over the same, is strictly forbidden, except in such cases where authority therefor is granted by the superintendent.

11. The sale or use of intoxicating liquors on the Government lands in the park is strictly forbidden.

12. Private notices or advertisements shall not be posted or displayed on the Government lands within the reservation, except such as may be necessary for the convenience and guidance of the public.

13. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who may violate any of the foregoing rules may be summarily removed from the park and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

14. The superintendent designated by the Secretary is hereby authorized and directed to remove all trespassers from the Government lands in the park and enforce these rules and regulations and all the provisions of the act of Congress aforesaid.

Regulations of March 30, 1907, Governing the Impounding and Disposition of Loose Live Stock.

Horses, cattle, or other domestic live stock running at large or being herded or grazed on the Government lands in the Sequoia National Park without authority from the superintendent of the park, will be taken up and impounded by the superintendent, who will at once give notice thereof to the owner, if known. If the owner is not known, notices of such impounding, giving a description of the animal or animals, with the brands thereon, will be posted in six public places inside the park and in two public places outside the park. Any owner of an animal thus impounded may, at any time before the sale thereof, reclaim the same upon proving ownership and paying the cost of notice and all expenses incident to the taking up and detention of such animal, including the cost of feeding and caring for the same. If any ainmal thus impounded shall not be reclaimed within thirty days from notice to the owner or from the date of posting notices, it shall be sold at public auction at such time and place as may be fixed by the superintendent after ten days' notice, to be given by posting notices in six public places in the park *and two public* places outside the park, and by mailing to the owner, *if known, a copy* thereof.

All money received from the sale of such animals and remaining after the payment of all expenses incident to the taking up, impounding, and selling thereof, shall be carefully retained by the superintendent in a separate fund for a period of six months, during which time the net proceeds from the sale of any animal may be claimed by and paid to the owner upon the presentation of satisfactory proof of ownership; and if not so claimed within six months from the date of sale such proceeds shall be turned into the Sequoia National Park fund.

The superintendent shall keep a record in which shall be set down a description of all animals impounded, giving the brands found on them, the date and locality of the taking up, the date of all notices and manner in which they were given, the date of sale, the name and address of the purchaser, the amount for which each animal was sold and the cost incurred in connection therewith, and the disposition of the proceeds.

The superintendent will, in each instance, make every reasonable effort to ascertain the owner of animals impounded and to give actual notice thereof to such owner.

GENERAL GRANT NATIONAL PARK.

1. By act of Congress, approved October 1, 1890, the tract of land in the State of California described as sections 5 and 6, in township 14 south, range 28 east, of Mount Diablo Meridian, and also sections 31 and 32 of township 13 south, range 28 east of the same meridian, have been set apart for a public park, and the same shall be known as the "GENERAL GRANT NATIONAL PARK," "General Grant" being the name by which the Great Tree therein is so widely known.

All other provisions of the General Grant Park regulations are the same as those for Sequoia National Park.

REPORT OF THE ACTING SUPERINTENDENT OF MOUNT RAINIER NATIONAL PARK.

REPORT OF THE ACTING SUPERINTENDENT OF MOUNT RAINIER NATIONAL PARK.

ORTING, WASH., *September 30, 1908.*

SIR: I have the honor to submit the following report of the condition of the affairs in and the management of the Mount Rainier National Park in the State of Washington for the season of 1908.

By the act of Congress approved March 2, 1899 (30 Stat., 993), certain tracts of land therein described, lying in the State of Washington, were set aside for the benefit and enjoyment of the people of the United States, to be known as the "Mount Rainier National Park." This park is 18 miles square, with an area of 207,360 acres, and lies wholly within the Rainier National Forest. The summit of Mount Rainier is about 1½ miles southwest of the center of the park, but the reservation includes substantially the whole mass of the mountain proper with its wonderful glaciers.

The park by said act is placed under the exclusive control of the Secretary of the Interior, who, among other things, is authorized to establish rules and regulations and cause adequate measures to be taken for the preservation of the natural curiosities, timber, mineral deposits, game, etc., and the removal of unlawful occupants or trespassers. The regulations heretofore issued were substantially amended to meet existing conditions and reissued under date of June 10, 1908; automobile regulations were also necessary to properly protect the traveling public in the park.

PATROLS.

The valleys within the park are separated by high and broken ridges, which render any continuous route of travel or patrol extending thoughout the reservation impracticable. It is naturally divided by its topography into four separate districts formed by the watersheds of the larger streams.

The Nisqually district is the most accessible and the most important. It includes the government road, the hotels, and the most usually traversed trails. Nearly all of the tourist travel is confined to the valley of the Nisqually and to the open parks known as "Paradise Valley" and "Indian Henry's Hunting Ground." Longmire Springs is about a half day's journey by rail and stage from the city of Tacoma. On account of the ease with which this place and the vicinity can be reached it is becoming a popular resort, and the duties of the rangers stationed near it are, during the summer season, in some ways like those of the guardians of a suburban park. During the summer of 1907 the Nisqually district was in charge of one park ranger. He was assisted by two forest rangers who extended their

patrol in the adjacent National Forest to the park. Since January, 1908, a ranger has been on duty at the entrance to the park on the government road. It is necessary to station a ranger at this point constantly during the summer months in order to receive automobile permits and to prevent camping parties from taking firearms into the reservation. On May 1 an additional ranger went on duty at Longmire Springs. His patrol extends from that place to Paradise Valley and Indian Henry's Hunting Grounds. The Puyallup watershed includes the valleys of this stream and its tributaries, and the Spray Park region. There has been little tourist travel in this district during the past year. It is an interesting country and presents many natural attractions, but there are no roads or hotel accommodations, and their absence probably accounts for the small number of visitors. Prospectors are numerous. In the autumn the forests along the boundary are frequented by hunting parties whose inroads upon the park can be prevented only by constant vigilance. Fairfax, a coal-mining village at the terminus of one of the branch lines of the Northern Pacific Railway Company, is 5 miles distant from the western boundary of the park. Several of the residents are not in sympathy with either state or federal game laws. Some of them keep hounds for the purpose of running deer, and are always ready, for a small remuneration, to assist the more disreputable sportsmen of Tacoma and Seattle in their hunting expeditions. This district was in charge of a ranger until December 31, 1907. It was thought that no patrol would be necessary except where there was fire danger and during the months when the game was not protected by the state law. There is, however, reason to believe that after the removal of the ranger several instances of game trespass occurred. Measures have since been taken for the employment of a ranger in this district throughout the year.

The White River district is located in the remote northern and eastern part of the reservation. The rangers made occasional trips into this region, but were not able to protect it properly. It is exposed to danger of forest fire and to game trespass by prospectors. Arrangements were made for the employment of an additional ranger to patrol this district during the summer months of 1908. The completion of the trail now in process of construction over the high divide between the Carbon and White river valleys will greatly facilitate guarding the remoter parts of the park.

There is little travel of any kind in the Cowlitz River district. The Cowlitz Glacier is sometimes visited by tourists who reach it by crossing smaller glaciers east of Paradise Valley. Occasionally expeditions are made up the Muddy Fork Ridge by settlers and Indians. The region between Mount Rainier and the main range of the Cascades is little known and extremely rough and broken. The summit of the Cascades beyond the park is an open country and easily traveled, and is utilized for sheep pasturage. This stock is grazed under permit from the Department of Agriculture and the number and location of the bands are known to the rangers. There is no difficulty in keeping the sheep from crossing the park line. The present conditions do not warrant the employment of a park ranger for the Cowlitz district exclusively.

The location and altitude of the park result in weather conditions which make it peculiarly difficult to maintain an efficient and econom-

ical patrol. The season of tourist travel and of fire danger is variable, but it commonly extends from the last of June to the middle of September. During these months there is urgent need of a constant patrol in all the frequented parts of the reservation. In the spring and fall the rangers are engaged in the repair and construction of trails. During the rest of the year their duties consist in the protection of game, and there are long periods when the depth of soft, wet snow and almost incessant storms make any attempt at patrol both impracticable and useless. It is evident that a large number of rangers are needed in summer, and that there is occupation for but few in winter. However, it can not be expected that rangers who are good woodsmen and who combine the other necessary qualifications of firmness, discretion, and business ability can be secured by the offer of employment for a few months during the summer. The organization of an efficient ranger force requires the permanent employment of men who can be depended upon to be thoroughly devoted to their occupation. On the whole, it seems to me that most of the rangers in the park should be employed throughout the year, and I believe that their exertions during the summer would compensate for the periods of enforced idleness during the winter. The use of a suitable uniform by rangers is recommended.

FOREST CONDITIONS.

There are occasional instances of diseased trees, but the timber throughout the park seems on the whole to be in a thrifty condition and free from insect depredations. Ground rot and conk are not so prevalent as they are at a lower elevation. On the subalpine areas in the park the growth of the trees is very slow and reproduction poor. In Paradise Valley and in the other mountain parks trees require from one hundred to one hundred and fifty years to attain a diameter of 12 inches. Since their destruction would be a permanent injury to the park the utmost care should be taken to prevent them from being cut or killed by fire.

GAME.

Deer are abundant in many parts of the park. They are particularly numerous in the valleys of the Puyallup and the Mowich rivers and on the ridges between these streams. They are, however, seldom seen by the tourists who take the usual trip over the government road to Longmire Springs, and thence to Paradise Valley. The dense undergrowth prevents the deer from being visible along the government road, and the open parks are not frequented by them to any great extent. During the winter many of the deer leave the park and seek the forests at a lower elevation; the laws of the State of Washington prohibit hunting them at this time of the year. These laws are now more strictly enforced than they were formerly, and it is to be trusted that most of the deer will survive to return to their accustomed summer range in the park.

Goats are now found only in the high mountains. They can still be seen in bands of from 15 to 30 in the Sluiskin Range and are not uncommon elsewhere in the northern and eastern part of the reservation. They have not, so far as I have been informed, been seen about Paradise Valley during the last year. Whether these interesting ani-

mals have actually decreased during the past few years, or whether they have only retired to the remoter parts of the park, I am unable to state. Their disappearance from Paradise Valley may be accounted for by the blasting on the government road, and I have reason to believe that in the summer of 1907 the band about Glacier Basin was shot at by prospectors. This was, however, an exceptional case; there have been few instances in which they have been disturbed in any way. I am inclined to believe that the number is slowly diminishing, and that this is due mainly to restricted range. They have almost entirely disappeared from the mountains in the adjacent national forest, where they were once common at a much lower elevation than where they are now found in the park.

Bears are fairly numerous, but no more so than in the other unsettled parts of the State. Cougars are not uncommon, and it is probable that they kill a great many of the deer in the park.

Firearms are prohibited in the reservation except under written permit from the acting superintendent. Requests to carry guns are usually denied. It is thought that a revolver is sufficient for protection against such wild animals as are found in the park. No firearms of any description are allowed in the vicinity of Longmire Springs and Paradise Valley, on account of the danger of accident to the tourists.

FISH.

Some trout are found in the streams, but they are small and not plentiful. The rivers are turbid in the summer time when the glaciers are in motion, and the smaller streams are too rapid to be well stocked with fish.

ROADS, TRAILS, AND AUTOMOBILES.

The government road, constructed under the direction of Maj. H. M. Chittenden, U. S. Engineer Corps, and Assistant Engineer Ricksecker, has been extended several miles beyond Longmire Springs. The total length from the western boundary of the forest reserve was, on July 1, 1908, 14 miles, and about 11 miles is still to be constructed. Work was still further extended after the fiscal year, and the road is now built to beyond Narada Falls. It was thrown open to the public as far as the Nisqually Glacier July 14, and is the first road constructed by the United States to reach a glacier. It has rendered the southern part of the park easily accessible and greatly increased the amount of tourist travel.

During the season of 1908, 117 permits were issued for automobiles to enter the park by the government road. It is well adapted for their use by the even grade and the roadbed, which is very good during the summer months. Their use, except under strict regulations as to speed, would be attended with considerable danger. The road contains many abrupt curves, and there are few places between the park boundary and Longmire Springs where an automobile approaching at any considerable rate of speed could be seen in time to avert a collision. The danger that would result in exceeding the speed limit is well understood by the owners of automobiles, and with a few notable exceptions they are desirous of observing the regula-

tions. Every effort was made by the rangers to enforce the rules governing automobiles and to so regulate the use of the road as to prevent any danger of a collision. One accident was reported. In this instance a stage wagon containing several passengers was overturned; the occupants were unhurt, but the wagon and horses sustained some damage. The owners of automobiles derive a great deal of pleasure from the use of the road, and I do not think that there is now any very general objection to them on the part of the public. The road is used to some extent by private vehicles, but principally by stages and by freight wagons hauling supplies for the camps on that part of it which is still under construction. The stage drivers and freighters, who know when to expect automobiles and whose teams are accustomed to them, do not consider them dangerous.

The Carbon River trail, from the northwest corner of the park to the Carbon Glacier, was washed out by the floods of the preceding winter. It was rebuilt and in part relocated. A route to continue this trail over the divide to White River was laid out and work upon it commenced in the summer of 1908. The Paradise Valley trail was graded and repaired and a trail was constructed from Longmire Springs to Indian Henry's Hunting Ground. It is very desirable that the trails in the Carbon and White river watersheds be extended.

The following extract is taken from a report of Major Chittenden to the Secretary of the Interior, dated October 21, 1907, relative to trail and other improvement work:

> The one great attraction of this park is the mountain that gives it its name. The first purpose of the improvement work should therefore be to make this attraction as accessible as possible to tourists. A great many visitors desire to ascend the mountain, and I thoroughly approve the suggestion to do some necessary work to provide for the comfort and safety of parties making the climb. Under present conditions it is necessary to spend one night on a bare rock, without a semblance of shelter or means of essential comfort. The next night is spent in the crater at the summit, where there is a degree of natural warmth but no shelter. At one point on the ascent, viz, at Gibraltar Rock, there is a dangerous passage that should be improved. There ought to be constructed a fairly good trail from the Camp of the Clouds up, and two shelters—one at Camp Muir, at the end of the first stage of the climb, and the other in the crater.
>
> A bridle trail around the mountain just under the glacier line is absolutely essential to the proper policing of the park, and very necessary for the convenience of tourists if they are really to have access to the attractions of the park. The trail should be so located that in time it may be enlarged into a wagon road.

RANGER CABINS.

Two cabins were built under the supervision of the rangers. One is at the entrance to the park and one is near Longmire Springs. Both were well designed and finished. The rangers have shown a commendable pride in making the surroundings attractive by clearing away the brush and logs and setting out wild flowers.

PROSPECTING.

Prospecting has been carried on in the park for many years and traces of the precious metals have been found in several localities. The formation of the rock does not, however, justify the presumption that mineral exists in paying quantities. The results of such devel-

opment work as has been performed has usually shown that the supposed veins terminated at a slight depth below the surface. The total number of locations which have been made from time to time is very large, but most of them have been abandoned. On the greater proportion nothing has ever been done beyond the posting of a notice of the location and the filing of it in the office of the county auditor. Some of them were taken in good faith and in a few instances considerable money and labor have been expended in developing them. There are no mines in the park from which any profit is derived except from the sale of stock. In general it may be said that practical miners and men who are qualified as experts by experience and professional training are not engaged in mining operations in the park.

The Washington Mining and Milling Company has located 39 lode claims in the reservation and employed from 7 to 15 men throughout the year. They have erected a number of buildings and dug 250 feet of tunnel besides making several excavations. A considerable amount of development work has been done in the Glacier Basin by Mr. Nils Starbo. He has put up a small sawmill with which he cuts timber for use on his claim. At the head of the Mowich River, in Spray Park, there is an abandoned mine upon which there must have been an expenditure of several thousand dollars. The cabins are well constructed and still in good repair. Several claims have been located near Longmire Springs, most of them upon land which has some prospective value for business purposes. One claim adjoins the hotel site belonging to the heirs of James Longmire. I could find upon it no indications of mineral except a small open cut exposing a hydrated oxide of iron, of no commercial value, locally designated as mineral paint. The improvements consisted of a log cabin, which the Longmires have used as a meat house.

By act of Congress approved May 27, 1908, the location of mining claims under the mineral-land laws of the United States was prohibited within the Mount Rainier National Park. The act provides that existing rights previously acquired in good faith should not be affected. Where it appears that there has been no actual discovery and that the land is being held for other purposes than its mineral value, and where the mining law has not been complied with, a careful investigation should be made, and whenever the facts warrant such action, the proper measures taken to cancel the claims.

The records of the auditor of Pierce County indicate that 48 mining claims were located in the park during the year ended June 30, 1908. Of this number 35 were located after the passage of the act of May 27, 1908, which prohibited the location of mining claims within the park.

TRAVEL.

Two thousand six hundred and twenty-six visitors entered the park by way of the government road; of this number 153 were campers who remained three or more days. Two hundred persons were known to have visited the northern part of the reservation, entering by way of Fairfax. The total number of visitors was 2,826, an increase of 758 over last year. The number of prospectors is not definitely known, but there must have been nearly 100.

HOTELS AND CAMPS.

There are two hotels at Longmire Springs. The National Park Inn is operated by the Tacoma Eastern Railroad Company upon the site held under lease granted by the Department of the Interior. There are sleeping rooms in the hotel sufficient for 60 persons, and 75 can be accommodated in the tents used in connection with it. The meals furnished were good, and the accommodations generally met with the approval of the public. One thousand five hundred and forty-eight guests were entertained.

The Longmire Springs Hotel is located on patented land owned by the heirs of James Longmire, deceased, who obtained patent under the mining laws. This tract contains several mineral springs which are objects of interest to the tourists and may have some medicinal value. For this reason, and because the private ownership of the tract may interfere with the administration of the park, its purchase by the Government is desirable. The present managers of the hotel require their guests to observe the regulations governing the park, and have always been ready to assist the rangers in preventing game trespass and forest fires. The buildings are old and very roughly constructed, and the grounds are not kept in such a way as to add to the attractions of the park. The number of guests registered at the Longmire Springs Hotel during the year was 925.

The tent camp hotel operated by Mr. John L. Reese under permit is located in Paradise Valley about one-half mile east of the Nisqually Glacier. The accommodations provided were good. The number of guests entertained during the year was 1,375. A permit was granted to Mr. George B. Hall to maintain a tent camp at Three Lakes, in Indian Henry's Hunting Ground. It was not opened until after June 30, 1908.

PRIVILEGES.

In addition to the hotel under lease to the Tacoma Eastern Railroad Company and the tent camp privileges granted during the season of 1908 to Messrs. Reese and Hall, there have been granted permits as follows: To George B. Hall, to maintain a livery stable at Longmire Springs; to L. G. Linkletter, for a photographic concession at such point; and to the Tacoma Baggage and Transfer Company and to John Longmire, for the transportation of passengers in and through the park, using therefor 6 wagons and 1 wagon, respectively.

ESTIMATES.

Estimates for the ensuing fiscal year are as follows: Salaries of superintendent, 2 regular and 3 temporary park rangers, $5,150; roads, trails, protection from forest fires, etc., $1,850; total, $7,000.

RECOMMENDATIONS.

It is of the first importance to provide for the adequate protection of the trees and animals of the park. Improvements can be made at any time, but the effects of forest fires at a high altitude are irreparable, and it is not easy to replace large game in any locality in which it has become extinct. An efficient ranger force should be

organized to protect the natural attractions of the park and a system of trails constructed which will make it practicable to maintain a thorough patrol. Two rangers should serve throughout the year and three additional rangers be on duty during the summer months. A ranger cabin is required in the Carbon River Valley. I have estimated that $150 will be required for the repair of existing trails. An emergency fund of $300 should be kept on hand for use in the event of a large forest fire, to hire extra labor.

I have further to recommend that an examination be made of the mining claims in the park by a competent geologist, and that the 18.2 acres of patented land known as the Longmire tract be purchased by the Government.

Very respectfully,

G. F. ALLEN,
Acting Superintendent.

The SECRETARY OF THE INTERIOR.

RULES AND REGULATIONS.

GENERAL REGULATIONS OF JUNE 10, 1908.

Pursuant to the authority conferred by the acts of Congress approved March 2, 1899, and May 27, 1908, the following rules and regulations for the government of the Mount Rainier National Park, in the State of Washington, are hereby established and made public:

1. It is forbidden to injure or disturb in any manner any of the mineral deposits, natural curiosities, or wonders on the government lands within the park.

2. It is forbidden to cut or injure any timber growing on the park lands, or to deface or injure any government property. Camping parties will be allowed to use dead or fallen timber for fuel.

3. Fires should be lighted only when necessary and completely extinguished when not longer required. The utmost care must be exercised at all times to avoid setting fire to the timber and grass.

4. Hunting or killing, wounding or capturing any bird or wild animal on the park lands, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed on the park lands under other circumstances than prescribed above, will be taken up by the superintendent and held subject to the order of the Secretary of the Interior, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof.

5. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook or line, is prohibited. Fishing for purposes of merchandise or profit is forbidden. Fishing may be prohibited by order of the superintendent in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

6. No person will be permitted to reside permanently, engage in any business, or erect buildings, etc., upon the government lands in the park, without permission, in writing, from the Secretary of the Interior. The superintendent may grant authority to compentent persons to act as guides and revoke the same in his discretion. No pack trains will be allowed in the park unless in charge of a duly registered guide.

7. Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; such lands, however, shall have the metes and bounds thereof so marked and defined that they may be readily distinguished from the park lands. Stock may be taken over the park lands to patented lands with the written permission and under the supervision of the superintendent.

8. Hereafter the location of mining claims under the mineral-land laws of the United States is prohibited within the park. Persons who have heretofore acquired in good faith rights to any mining location or locations shall not be permitted to injure, destroy, or interfere with the retention in their natural condition of any timber, mineral deposits, natural curiosities, or wonders within said park outside the boundaries of their respective mining claims duly located and held under the mineral-land laws.

9. The herding or grazing of loose stock or cattle of any kind on the government lands in the park, as well as the driving of such stock or cattle over the same, is strictly forbidden, except in such cases where authority therefor is granted by the superintendent.

10. No drinking saloon or barroom will be permitted upon government lands in the park.

11. Private notices or advertisements shall not be posted or displayed on the government lands within the reservation, except such as may be necessary for the convenience and guidance of the public.

12. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the park and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

No lessee or licensee shall retain in his employ any person whose presence in the park shall be deemed and declared by the superintendent to be subversive of the good order and management of the reservation.

13. The superintendent designated by the Secretary is hereby authorized and directed to remove all trespassers from the government lands in the park and enforce these rules and regulations and all the provisions of the acts of Congress aforesaid.

REGULATIONS OF JUNE 10, 1908, GOVERNING THE IMPOUNDING AND DISPOSITION OF LOOSE LIVE STOCK.

Horses, cattle, or other domestic live stock running at large or being herded or grazed in the Mount Rainier National Park without authority from the Secretary of the Interior, will be taken up and impounded by the superintendent, who will at once give notice thereof to the owner, if known. If the owner is not known, notice of such impounding, giving a description of the animal or animals, with the brands thereon, will be posted in six public places inside the park and in two public places outside the park. Any owner of an animal thus impounded may, at any time before the sale thereof, reclaim the same upon proving ownership and paying the cost of notice and all expenses incident to the taking up and detention of such animal, including the cost of feeding and caring for the same. If any animal

thus impounded shall not be reclaimed within thirty days from notice to the owner or from the date of posting notices, it shall be sold at public auction at such time and place as may be fixed by the superintendent after ten days' notice, to be given by posting notices in six public places in the park and two public places outside the park, and by mailing to the owner, if known, a copy thereof.

All money received from the sale of such animals and remaining after the payment of all expenses incident to the taking up, impounding, and selling thereof, shall be carefully retained by the superintendent in a separate fund for a period of six months, during which time the net proceeds from the sale of any animal may be claimed by and paid to the owner upon the presentation of satisfactory proof of ownership, and if not so claimed within six months from the date of sale such proceeds shall be turned into the Mount Rainier National Park fund.

The superintendent shall keep a record in which shall be set down a description of all animals impounded, giving the brands found on them, the date and locality of the taking up, the date of all notices and manner in which they were given, the date of sale, the name and address of the purchaser, the amount for which each animal was sold and the cost incurred in connection therewith, and the disposition of the proceeds.

The superintendent will, in each instance, make every reasonable effort to ascertain the owner of animals impounded and to give actual notice thereof to such owner.

REGULATIONS OF JUNE 10, 1908, GOVERNING THE ADMISSION OF AUTOMOBILES.

Pursuant to authority conferred by the act of March 2, 1899 (30 Stat., 993), setting aside certain lands in the State of Washington as a public park, the following regulations governing the admission of automobiles into the Mount Rainier National Park, during the season of 1908, are hereby established and made public:

1. No automobile will be permitted within the metes and bounds of the Mount Rainier National Park unless the owner thereof has first secured a written permit from the acting superintendent, G. F. Allen, Orting, Wash.

2. Applications for permits must show: (*a*) Name of owner, (*b*) number of machine, (*c*) name of driver, and (*d*) inclusive dates for which permit is desired, not exceeding one year, and be accompanied by a fee of $5 for each machine.

Permits must be presented to the acting superintendent or his authorized representative at the park entrance on the government road. The permittee will not be allowed to do a transportation business in the park without license therefor from the Secretary of the Interior.

3. The use of automobiles will be permitted on the government road as far as completed from the western boundary of Mount Rainier National Park to beyond Longmire Springs, between the hours of 9 a. m. and 11 a. m., and between the hours of 3.30 p. m. and 5.30 p. m., but such machines must be kept in advance of the stages.

During these hours teams may meet automobiles. At all other times automobiles are excluded from the use of roads within the park.

4. When teams approach, automobiles will take position on the outer edge of the roadway, regardless of the direction in which they are going, taking care that sufficient room is left on the inside for passage of teams.

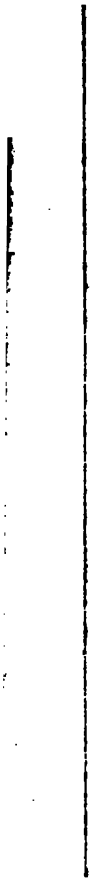
5. Automobiles will stop when teams approach and remain at rest until teams have passed or until teamsters are satisfied regarding the safety of their teams.

6. Speed will be limited to 6 miles per hour, except on straight stretches where approaching teams will be visible, when, if no teams are in sight, this speed may be increased.

7. Signal with horn will be given at or near every bend to announce to approaching teams the proximity of an automobile.

8. Teams have the right of way, and automobiles will be backed, or otherwise handled, as necessary, so as to enable teams to pass with safety.

9. Violation of any of the foregoing rules will cause the revocation of permit; will subject the owner of the automobile to any damages occasioned thereby, and to ejectment from the reservation; and be cause for refusal to issue a new permit to the owner of the machine without prior sanction in writing from the Secretary of the Interior.



REPORTS OF THE SUPERINTENDENT OF MESA VERDÉ NATIONAL PARK AND J. WALTER FEWKES, IN CHARGE OF EXCAVATION AND REPAIR OF RUINS.

REPORT OF SUPERINTENDENT OF MESA VERDE NATIONAL PARK.

OFFICE OF THE SUPERINTENDENT,
MANCOS, COLO., *September 4, 1908.*

SIR: I have the honor to submit the following report on the management of the Mesa Verde National Park for the fiscal year ended June 30, 1908.

By act of Congress approved June 29, 1906 (34 Stat., 616), certain tracts of land in Montezuma County, Colo., adjacent to the Southern Ute Indian Reservation, were reserved and withdrawn from settlement, entry, sale, or other disposal, and set apart as a public reservation to be known as the "Mesa Verde National Park." The area of this tract is 65.5 square miles, or 41,920 acres, and the altitude of the highest point, Point Lookout, is 8,700 feet above sea level and 2,000 feet above the Montezuma Valley, the southern rim of which follows the park boundary line on the north for miles.

The park is placed under the exclusive control of the Secretary of the Interior, who is authorized to prescribe such rules and regulations and establish such service as he may deem necessary for the care and management of the park, and for the preservation from injury or spoliation of the ruins and other works and relics of prehistoric or primitive man within the limits of the reservation, and to grant permits for the examination, excavation, and other gathering of objects of antiquity by any person or persons deemed properly qualified to conduct the same, provided they are undertaken only for the benefit of some reputable museum, university, college, or other recognized scientific or educational institution, with a view to increasing the knowledge of such objects and aiding the general advancement of archæological science.

The act also provides that all prehistoric ruins situated within 5 miles of the boundaries of the park, on Indian and public lands not alienated by patent from the ownership of the United States, shall be under the custodianship of the Secretary of the Interior, to be administered by the same service established for the custodianship of the park. The area of this 5-mile strip is about 274 square miles, or 175,360 acres.

The Rio Mancos cuts through the park and abutting 5-mile strip from northeast to southwest, forming a canyon 1,000 to 2,000 feet deep. On both sides of this gorge, more especially to the west, narrow lateral canyons of like depth and even more picturesque beauty cut the mesa into shreds, producing successions of huge promontories, sculptured ledges, and bold, jagged cliffs. The Navaho, Cliff, Moccasin, and Ute are the principal canyons which enter the Mancos from the north. These, with their numerous branches, furnish the labyrinth of cliffs in the high and almost inaccessible

recesses of which we find the abandoned homes of the ancient inhabitants. The Fort Lewis, Grass, and Webber canyons, running into Mancos Canyon from the east, contain many ancient ruins, but are rather less picturesque than those on the west.

Within the park jurisdiction are many notable prehistoric ruins, the cliff dwellings comprising a group of great importance to the study of American archæology.

The principal and most accessible ruins are the Spruce Tree House,[a] located near the head of a draw of Navaho Canyon, originally containing about 130 rooms, built of dressed stone laid in adobe mortar, with the outside tiers chinked with chips of rock or broken pottery; the Cliff Palace, located about 2 miles east of the Spruce Tree House, in a left branch of the Cliff Canyon, consisting of a group of houses with ruins of 146 rooms, including 20 round kivas, or ceremonial rooms, and a tapering loopholed tower, forming a crescent of about 100 yards from horn to horn, which is reputed to be one of the most famous works of prehistoric man in existence; the Balcony House, a mile east of the Cliff House, in Cliff Canyon, containing about 25 rooms, some of which are in almost perfect condition. In each of these villages is an elaborate system of fortifications, with, in some cases, walls 2.3 feet thick and 20 feet high, watchtowers 30 feet high, and blockhouses pierced with small loopholes for arrows.

These villages and other important ruins, particularly the Spring House, Long House, and Mug House, are located on the Southern Ute Indian Reservation, within the 5-mile strip surrounding the park, where the park jurisdiction is not exclusive, and when tourist travel increases the preservation and protection of such objects of antiquity will no doubt be more difficult than for the ruins on park lands.

GENERAL STATEMENT.

The present superintendent arrived in Mancos, Colo., and formally took charge on August 31, 1907. Headquarters were established and furnished in rooms in the Bauer Bank Building, in Mancos.

The first work of the superintendent was to inspect the park and determine what service would be necessary for the immediate administration thereof. It was found that the services of one park ranger would be needed; this was recommended, and appointment made as authorized. As nothing had been done toward the improvement and organization of the park, it was found necessary to do some temporary work, pending the acceptance of permanent plans for its management and development. Workmen were employed to clear away the rubbish left by the camping parties of previous years, and to put the grounds around Spruce Tree House, which for the present affords the most agreeable camping place for travelers, in proper condition. For the present the cabin which has stood for some years at this place was allowed to remain for temporary use. All unsightly débris was removed and orders given that in the future no rubbish would be allowed to accumulate about camps or in the vicinity of the principal ruins.

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[a] More recent and reliable data in regard to Spruce Tree House will be found in the report of Dr. J. Walter Fewkes.

In May, 1908, it was found necessary to employ two additional rangers to assist in the care of the park and serve as guides to travelers during the tourist season. It was also found necessary to employ a clerk for a short time during the spring to keep the office open during the absence of the superintendent in the park.

ROADS AND TRAILS.

The entrance to the park could be effected only by means of horse trails, which had never been properly constructed, and were in bad condition. In order to prepare for travel during the season of 1908, the principal trail was repaired and improved.

It is absolutely necessary, if the park is ever to fulfill the purposes for which it was created, to build a road for carriages and other vehicles from the boundary to the principal ruins. Comparatively few travelers are willing to undertake the long and difficult horseback ride, up a steep and dangerous trail, and over 10 miles of rough country, to reach the ruins. No matter how great may be their interest in these remarkable remains of antiquity, they do not feel like undergoing the hardships and expense which must now be incurred to reach them.

The expense of conducting the excavations, developing the water supply, and of improvements of every kind, is very great because of this lack of a suitable highway. All supplies, tools, and material have to be transported by means of pack animals at present, and this expense could be materially lessened.

In the fall of 1907 Mr. George Mills, United States deputy surveyor, under contract with the department, commenced to survey a practicable route for a wagon road from the northern boundary of the park through the reservation and a portion of the 5-mile strip to the Spruce Tree House. This survey was completed in the spring of this year and accepted, but until adequate appropriation is made by Congress the expensive portion of the road building, at the point where it leads up onto the mesa, can not be undertaken to advantage. No preliminary work, except in clearing chaparral along a portion of the route of survey, was practicable to the end of the fiscal year, on account of lack of funds. An allotment of $1,900 was, however, made from the current appropriation for such work as could be done upon the mesa at a relatively small expense, covering work from the Spruce Tree House to station 668, on the line of survey, and 2 miles of trail from such station, as well as a trail system to connect Spruce Tree House, Cliff Palace, Peabody House and Balcony House. This amount will all be practically expended by October 15, but as the expense of some of the trail work was greater than anticipated, the road construction may not be extended quite to the point planned. I have submitted an estimate of $15,000 as the amount required to complete the wagon road as surveyed.

It is suggested that, as the park was created for the purpose of making the ancient ruins therein accessible to the traveling public, there should be another carriage road constructed wholly upon the mesa, touching the points of greatest scenic and historic interest. The most favorable route would probably be from Spruce Tree House along the rim of Navaho Canyon, touching Alcove House, Navaho Point, the Swallows' Nest, Peabody House, and Casa Colorado;

thence across the mesa to Cliff Canyon, at a point overlooking the ruins of Cliff Palace, Cedar House, and the Fewkes Canyon group; thence around to Cliff Palace and across to Balcony House on Ruin Canyon, from which point it should return in a direct line to Spruce Tree House. This road would be about 8 miles in length, and the cost of construction comparatively small.

Because of the great depth of the canyons, cutting the mesa from north to south, the expense of building a road to some of the most interesting ruins in the western part of the park is too great for it to be undertaken at present, although trails could be built for $500 from Spruce Tree House to the important ruins of Garfield Canyon and its tributaries and bring them within four hours' ride of the former ruin.

WATER SUPPLY.

The natural water supply of the park was found to be quite limited, and entirely insufficient for future use. In February, 1908, the question of improving and developing the supply was taken up. Under the advice of a competent engineer and stone mason plans were prepared and submitted. These were found acceptable to the department; and in pursuance thereof, contracts were let for the building of a dam at the head of Spruce Tree Canyon for the purpose of storing water for stock. This was finished in May, and with some improvements, found necessary after the coming of the rainy season, will be entirely adequate for the purpose for which it was designed.

In order to increase the supply of water for domestic purposes, it was deemed advisable to conserve the water of the spring at Spruce Tree House by the building of cisterns. These were included in the contract for the building of the dam and completed at about the same time. For the purpose of conveying the water from the spring to the cisterns, and to catch the seepage from the canyon walls, a trench was constructed under a separate contract. The supply of water provided for by these improvements appears to be ample for all present requirements.

EXCAVATION AND REPAIR OF RUINS.

The sum of $2,000 having been set aside for the purpose of excavating and repairing ruins during the fiscal year, under the direction of the Smithsonian Institution, Dr. J. Walter Fewkes began the excavation of Spruce Tree House on May 6. This work continued during the months of May and June, until the appropriation was exhausted. This ruin, which was formerly filled with rubbish and in a condition to fall rapidly into further decay, was completely cleared of all loose stones, dirt, and other débris. Walls that were found to be in a dangerous condition were properly repaired and strengthened, and such restoration was done as seemed necessary for the preservation of the buildings. Such antiquities as were found were forwarded to the National Museum at Washington. One hundred and fourteen living rooms were excavated, and eight kivas, or ceremonial chambers. Two rooms of the latter class were completely restored, after the plans of similar rooms found in the neighboring *ruin of Peabody* House. A fuller account of the excavation and

repair of Spruce Tree House, by Doctor Fewkes, the director of the work, is given by the report and illustrations of Doctor Fewkes which follow. Brass name plates have been placed on all of the larger ruins.

TRAVEL.

No great amount of travel in the park is to be expected until it is made accessible by the building of proper roads and trails. As no record was kept of the number of travelers until January of the present year, it is not possible to give an accurate statement of the total number, though it may be estimated at about 80. In the future all visitors will be required to register in a book kept for that purpose, so that the number can be accurately reported. Besides regular travelers and tourists, the park has already become a favorite resort for students of archæology and ethnology. In addition to the scientific work under Doctor Fewkes, above mentioned, 10 students of the School of American Archæology, under the direction of Dr. Edgar L. Hewett, director of American archæology for the Archæological Institute of America, have pursued studies among the ruins of the Mesa Verde.

FOREST FIRES.

No forest fires have occurred in the park during the period covered by this report.

GAME.

Some deer have been seen in the park in winter. There has been no unlawful killing of game, except by the Ute Indians, whose reservation falls partly within the park jurisdiction. It is thought that this can be prevented in the future through an understanding with the officers of the Indian Service. The amount of game can be increased by the development of the water supply in the remote canyons. Suggestions for this purpose will be made in a future report.

ORDER IN THE PARK.

Suitable places have been designated for campers, and all visitors to the ruins were conducted by the park rangers, or other persons duly authorized by the superintendent. No unlawful excavations have been made, and it was not found necessary to expel any person for disorderly conduct or violation of the park regulations.

LANDS.

At the time of the creation of this park there were 360 acres of patented lands, 560 acres in unpatented entries, and school sections 16 and 36 granted to the State, aggregating 2,080 acres. For administrative purposes these private holdings should be eliminated by Congress making adequate appropriation for the purchase thereof. In the 5-mile limit outside the park boundaries there were patented lands aggregating 31,535.98 acres, unpatented entries aggregating 13,890.16 acres, and lands granted to the State aggregating 4,920 acres. The Indian Office reports that there are no allotted lands in that portion of the Southern Ute Reservation within the 5-mile strip.

An investigation made in 1906 by Mr. M. K. Shaler, of the Geological Survey, demonstrates that there are workable coal beds underlying all of the park lands as far as the northern rim of the mesa, as well as the portion of the 5-mile strip coinciding with the Southern Ute Indian Reservation, upon which are located the principal ruins.

Mr. George S. Todd, of Cortez, Colo., who had made a coal location in Mesa Verde National Park after these lands were reserved from entry, and who made application for patent after the creation of the park and had his claim rejected by the Commissioner of the General Land Office, endeavored, during the last session of Congress, to secure legislation (S. bill 6818) which would permit him to enter the park under the coal-land laws of the United States. It is understood that the department does not favor the passage of such legislation, and in the absence of authority in the park act for the granting of privileges and leases his application for permission to work the coal lands claimed, later presented to the department, was denied.

PRIVILEGES.

The act setting aside the Mesa Verde National Park is defective in that no provision was made authorizing the Secretary of the Interior to grant privileges or lease sites for the entertainment and accommodation of tourists, etc., or for using the revenues derived from such privileges, leases, etc., in the care and management of the park. H. R. bill 19861 which was introduced last session by Hon. Warren A. Haggott, to permit the Secretary of the Interior, upon terms and conditions to be fixed by him, to grant leases and permits for the use of the lands and development of the resources of the park and 5-mile strip, is broad enough to cover rights of way, coal mining, grazing, etc., in addition to features for the accommodation of visitors. The importance of the passage of this legislation at an early date can not be overestimated.

RECOMMENDATIONS.

1. *Road building.*—The principal work on the main road surveyed to lead through the park should be continued at the earliest practicable date, and an additional carriage road constructed around the mesa between the main ruins and scenic points of interest. The extension of the trail system is very necessary, especially to reach the important outlying ruins.

2. *Excavation and repair of ruins.*—The work of Doctor Fewkes at Spruce Tree House fully demonstrates that provision should be made for the early excavation and repair of Cliff Palace, Balcony House, Peabody House, The Swallows' Nest, Casa Colorado, Nordenskiold House, Cedar House, and the ruins in Fewkes Canyon, this to be followed later by similar work on the ruins in Garfield Canyon and its tributaries. It is also desirable that many of the smaller and less conspicuous ruins be put in order as soon as possible, and that the burial mounds throughout the park be excavated and the specimens therein recovered and preserved.

3. *Local museum.*—In his report to the Department of the Interior, on which was based the act of Congress creating the Mesa Verde National Park, Dr. Edgar L. Hewett recommended not only the excavation and repair of the principal ruins, but also that all objects

of antiquity obtained thereby be kept in a museum within the park for the purpose of illustrating the life that existed in these ancient cliff villages. I can not too strongly urge that this recommendation be adopted. Nowhere else can these objects be so instructive as if restored to their proper places in the houses, or kept in a museum near at hand. This is now the general practice in Mexico, Italy, Greece, Egypt, and other foreign countries where there are noted ruins.

4. *Custodian's house.*—It is recommended that a house be constructed at Spruce Tree House so that a custodian may reside permanently near the ruins, and thus be enabled to give closer attention to their care, as well as to the comfort and convenience of travelers. Such a house can here be built most economically of stone. The greater part of the necessary building material can be obtained on the ground.

5. *Telephone line.*—As it is 25 miles from Mancos, the nearest outfitting point, to the ruins, a telephone line is needed for the purpose of keeping the park officers informed concerning the movements of parties and other matters relating to the administration of the park. It is recommended that provision be made for such a line during the coming year.

6. *Legislation.*—The private holdings in the park should be eliminated, and provision made for the granting of privileges and the use of revenues derived therefrom, by appropriate legislation at an early date.

ESTIMATES.

The following estimates of appropriation required for the ensuing fiscal year have been submitted: Salaries of superintendent, park rangers, etc., and incidental expenses, $4,600; continuation of wagon road construction, $15,000; excavation and repair of ruins, $8,000; construction and furnishing of office and residence for the superintendent, $2,500; telephone line, 18 miles, $1,800; trail improvements, $500; total, $32,400.

Respectfully submitted.

HANS M. RANDOLPH,
Superintendent.

The SECRETARY OF THE INTERIOR.

RULES AND REGULATIONS.

GENERAL REGULATIONS OF MARCH 19, 1908.

Pursuant to authority conferred by the act of Congress approved June 29, 1906, the following rules and regulations for the government of the Mesa Verde National Park, in Colorado, are hereby established and made public and extended as far as applicable to all prehistoric ruins situated within 5 miles of the boundaries thereof on Indian and public lands not alienated by patent from the ownership of the United States:

1. It is forbidden to injure or disturb, except as herein provided, any of the mineral deposits, natural curiosities, wonders, ruins, and other works and relics of prehistoric or primitive man, on government lands within the park or the ruins and other works or relics of prehistoric man on government lands within 5 miles of the boundaries of the park.

2. Permits for the examination of ruins, the excavation of archæological sites, and the gathering of objects of antiquity, will, upon application to the Secre-

tary of the Interior through the superintendent of the park, be granted to accredited representatives of reputable museums, universities, colleges, or other recognized scientific or educational institutions, with a view to increasing the knowledge of such objects and aiding the general advancement of archæological science, under the conditions and restrictions contained in present or future regulations promulgated by the Secretary of the Interior to carry out the provisions of the act of Congress approved June 8, 1906, entitled "An act for the preservation of American antiquities."

3. Persons bearing archæological permits from the Department may be permitted to enter the ruins unaccompanied after presenting their credentials to the superintendent or other park officer. Persons without archæological permits who wish to visit and enter the ruins shall in all cases be accompanied by a park ranger, or other person duly authorized by the superintendent.

4. The superintendent is authorized, in his discretion, to close any ruin on government lands within the park or the 5-mile limit, to visitors when it shall appear to him that entrance thereto would be dangerous to visitors or might result in injury to walls or other insecure portions thereof, or during repairs.

5. The superintendent is authorized, in his discretion, to designate the place or places to be used by campers in the park, and where firewood can be obtained by them. All garbage and refuse must be deposited in places where it will not be offensive to the eye or contaminate any water supply on the park lands.

6. It is forbidden to cut or injure any timber growing on the park lands, except as provided in paragraph 5 of these regulations; but dead or fallen timber may be taken by campers for fuel without obtaining permission therefor.

7. Fires should be lighted only when necessary and completely extinguished when not longer required. The utmost care must be taken at all times to avoid setting fire to the timber and grass.

8. Hunting or killing, wounding or capturing any bird or wild animal on the park lands, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed on the park lands under other circumstances than those prescribed above, will be taken up by the superintendent and held subject to the order of the Secretary of the Interior, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation and the actual owner thereof was not a party to such violation. Firearms will be permitted in the park only on written permission from the superintendent.

9. No person shall be permitted to reside permanently or to engage in any business on the government lands in the park without permission, in writing, from the Secretary of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains will be allowed in the park unless in charge of a duly registered guide.

10. Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; such lands, however, shall have the metes and bounds thereof so marked and defined as to be readily distinguished from the park lands. Stock may be taken over the park lands to patented lands with the written permission and under the supervision of the superintendent.

11. The herding or grazing of loose stock or cattle of any kind on the government lands within the park, as well as the driving of such stock or cattle over the same, is strictly forbidden, except in such cases where authority therefor is granted by the superintendent.

12. The sale of intoxicating liquors on the government lands in the park is strictly forbidden.

13. Private notices or advertisements shall not be posted or displayed on the government lands within the park, nor upon or about ruins on government lands within the 5-mile strip surrounding the same, except such as may be necessary for the convenience and guidance of the public.

14. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who may violate any of the foregoing rules, will be summarily removed from the park and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

15. The act creating the park provides that any person or persons who may, without having secured proper permission from the Secretary of the Interior, *willfully* remove, disturb, destroy, or molest any of the ruins, mounds, build-

ings, graves, relics, or other evidences of an ancient civilization or other property in said park, shall be deemed guilty of a misdemeanor, and upon conviction before any court having jurisdiction of such offenses shall be fined not more than $1,000 or imprisoned not more than twelve months, or such person or persons may be fined and imprisoned, at the discretion of the court, and shall be required to restore the property destroyed, if possible.

Any person or persons guilty of such vandalism upon government lands within the 5-mile strip will be liable to a penalty of $500 or imprisonment of not more than ninety days, or both, in the discretion of the court, as provided in the act of Congress approved June 8, 1906, entitled "An act for the preservation of American antiquities."

16. The superintendent designated by the Secretary of the Interior is hereby authorized and directed to remove all trespassers from the government lands in the park and to enforce these rules and regulations and all the provisions of the act of Congress creating the same.

The Indian police and field employees of the General Land Office are required to cooperate with the superintendent in the enforcement of these regulations as regards the 5-mile strip surrounding the park.

REGULATIONS OF MARCH 19, 1908, GOVERNING THE IMPOUNDING AND DISPOSITION OF LOOSE LIVE STOCK.

Horses, cattle, or other domestic live stock running at large or being herded or grazed on the government lands in the Mesa Verde National Park without authority from the superintendent of the park will be taken up and impounded by the superintendent, who will at once give notice thereof to the owner, if known. If the owner is not known, notices of such impounding, giving a description of the animal or animals, with the brands thereon, will be posted in six public places inside the park and in two public places outside the park. Any owner of an animal thus impounded may, at any time before the sale thereof, reclaim the same upon proving ownership and paying the cost of notice and all expenses incident to the taking up and detention of such animal, including the cost of feeding and caring for the same. If any animal thus impounded should not be reclaimed within thirty days from notice to the owner or from the date of posting notices, it shall be sold at public auction at such time and place as may be fixed by the superintendent after ten days' notice, to be given by posting notices in six public places in the park and two public places outside the park and by mailing to the owner, if known, a copy thereof.

All money received from the sale of such animals and remaining after the payment of all expenses incident to the taking up, impounding, and selling thereof, shall be carefully retained by the superintendent in a separate fund for a period of six months, during which time the net proceeds from the sale of any animal may be claimed by and paid to the owner upon the presentation of satisfactory proof of ownership; and if not so claimed within six months from the date of sale, such proceeds shall be turned into the Mesa Verde National Park fund.

The superintendent shall keep a record in which shall be set down a description of all animals impounded, giving the brands found on them, the date and locality of the taking up, the date of all notices and manner in which they were given, the date of sale, and the name and address of the purchaser, the amount for which each animal was sold, and the cost incurred in connection therewith, and the disposition of the proceeds.

The superintendent shall in each instance make every reasonable effort to ascertain the owner of animals impounded and give actual notice thereof to such owner.

REPORT ON EXCAVATION AND REPAIR OF THE SPRUCE TREE HOUSE, MESA VERDE NATIONAL PARK, COLORADO, IN MAY AND JUNE, 1908.

INTRODUCTION.

SIR: The author devoted the last two months of the fiscal year 1908 to the excavation and repair of the Spruce Tree House, one of the largest ruins of the Mesa Verde National Park. This work was made possible through the liberal and sympathetic support of the Secretary of the Interior, acting in conjunction with the Smithsonian Institution.[a] This action marks the entrance of the Interior Department into a new field of activity, the excavation and repair of our prehistoric ruins, and is a step of no small importance viewed from both the educational and the scientific standpoint.

The author chose this ruin in preference to others—work upon which would have been more striking—for several reasons. It was believed that the available appropriation would be about large enough to complete the excavation and repair of a ruin of this size, whereas it was thought too small for a larger one like the magnificent Cliff Palace. Moreover, the site of this ruin had many advantages. Spruce Tree House is situated near the place where all visitors camp after their long and hard trip up the mesa, and is naturally the first large cliff ruin which is seen by those who visit the park. If properly cleaned out, repaired, and labeled, it would convey a good idea of a cliff dwelling and thus serve as a type in the subsequent examination of the others. Fortunately, Spruce Tree House presents all the important architectural features found in other Mesa Verde ruins. It is easy of access, has an abundant water supply near by, and is within a convenient distance of the most famous ruins of the park. The impressions which a visitor obtains from it are lasting, and, if correct ones, must be of great aid in the interpretation of the structure of other ruins, where relations of parts are less apparent since the walls are hidden under rubbish and fallen walls. The Spruce Tree House is an excellent ruin to serve as a type and is well situated for that purpose.

EDUCATIONAL IDEAL.

The manual work at the Spruce Tree House consisted mainly of cleaning out rooms and repairing walls and plazas. The thought that was ever in the mind of the author was to make it more attractive to visitors and to increase its educational value. In the progress of the work it was found necessary to give considerable time to undertakings that are apparently only distantly related to excavation and repair. Of this nature may be mentioned the construction

[a] The author was assigned this work by the Secretary of the Smithsonian, at the request of the Secretary of the Interior, who allotted $2,000 for the purpose. This report considers the more general aspects of the work at Spruce Tree House and leaves many technical details for a later consideration.

of channels to turn the water from the ruin, the building of trails, labeling objects of interest, and grading the approaches to the ruin, which was almost inaccessible when work began. While none of these undertakings, except possibly the first mentioned, could be called expensive, all were essential to put the ruin in repair for preservation. Without proper drainage all repair work would have been futile or, at least, only of temporary value.

While the ideal of work at Spruce Tree House was to develop in the Mesa Verde National Park a "type ruin" from which visitors could become acquainted first hand with the general features of prehistoric buildings called cliff dwellings, it was also planned to show the meaning of their different parts, the construction and essential features of the rooms, their arrangement and special uses. Following the ideals of the Institution, with which the author is connected, he has sought to increase by excavation and repair the educational value of Spruce Tree House. It is hoped by him that visitors can now obtain much clearer ideas of a cliff house than before the work was undertaken.

REPAIR NOT RESTORATION.

Archæological experts may differ in their judgments regarding the extent of work necessary to repair a ruin as much mutilated as Spruce Tree House. It is difficult to determine a strict line of demarkation between repair and restoration work. The author has sought to avoid any restoration which would involve him in any theoretical questions even when he had good reasons to adopt an obvious interpretation. He has endeavored to preserve the picturesque character of the walls when possible and has not attempted to foist on the observer any theory of construction that was not clearly evident. Before the repair of a magnificent ruin like Cliff Palace could be attempted work on a small ruin like the Spruce Tree House was almost necessary. No one without some such experience in repair work should be intrusted with the excavation and repair of this important ruin.

METHOD OF EXCAVATION AND REPAIR.

Another ideal in the author's work at Spruce Tree House has been so to treat the ruin as to make it an object lesson for archæological students, showing by this means how ruins should be excavated and repaired. Hitherto, with the exception of the work under the author's direction at Casa Grande, by the Smithsonian Institution, archæological field work in the Southwest has been devoted mainly to making collections of pottery and small portable antiquities. In the effort to gather these minor antiquities the walls of ruins have been mutilated and left practically without any thought of protection from the elements. Architectural data have been sacrificed to obtain collections of those small objects which have a commercial value or will make an artistic impression when arranged on the shelves of a museum. It is hoped that the work done at Casa Grande Ruin in Arizona and the Spruce Tree House in Mesa Verde National Park the past season may influence archæologists to even greater care in the treatment of the ruins they are permitted to excavate in the Southwest. Our responsibiliy in this work is

very great, for we are dealing with precious data, which belong to posterity as well as to the present generation. The author believes he has no right to tear down walls and despoil prehistoric cemeteries for any other purpose than the advancement of knowledge. In his opinion beginners and those without training or experience should not be allowed to take charge of archæological work without direction on any of the great ruins of the Southwest. The author writes this in a spirit of humility, for he has been conscious throughout his work of the great responsibility which has rested upon him in the excavation and repair of one of the finest ruins in the Mesa Verde Park, and would gladly welcome any suggestion that would throw more light on the many difficult problems that present themselves to the field worker in this new archæology.

The intention of the author has not been the reconstruction but the repair of Spruce Tree House. Walls in danger of falling, especially those that have suffered a thrust from the perpendicular, have been so treated as to prevent their falling. No radical reconstruction of rooms has been attempted; the walls have not been built up, but the sky lines remain practically as they were before the excavations were begun.

It was found in excavating kivas and those rooms situated in front of the village that a considerable repair of walls was necessary to preserve the original structure of the rooms and their connection with those chambers situated in the deeper regions of the cavern. The defensive wall forming the front of the village had to be built up in places above the level of the plazas.[a] Some sections of the plaza floor were so damaged that much work was necessary to restore them to their former level.

PROTECTION FROM TORRENTS.

One source of injury to Spruce Tree House was the dripping water that in rainy weather falls over the canyon rim above it, thus often destroying whole sections of the exposed walls. This water is the drainage from a large extent of country covered with cedars lying east of the canyon. In heavy rains, when this overflow becomes a torrent, its force is sufficient to wash out mortar from the walls, causing the buildings to fall when their foundations are undermined. In order to obviate this difficulty as far as possible, there was blasted out of the solid rock a crescentic trench 254 feet long, averaging 2 feet deep by 3 feet wide, situated at its middle point 60 feet back from the canyon. The water from the cedars is deflected by this channel from the rim of the mesa above Spruce Tree House to points on the rim rock beyond the north and south ends of the ruin, where it falls over the cliff without endangering aboriginal masonry.

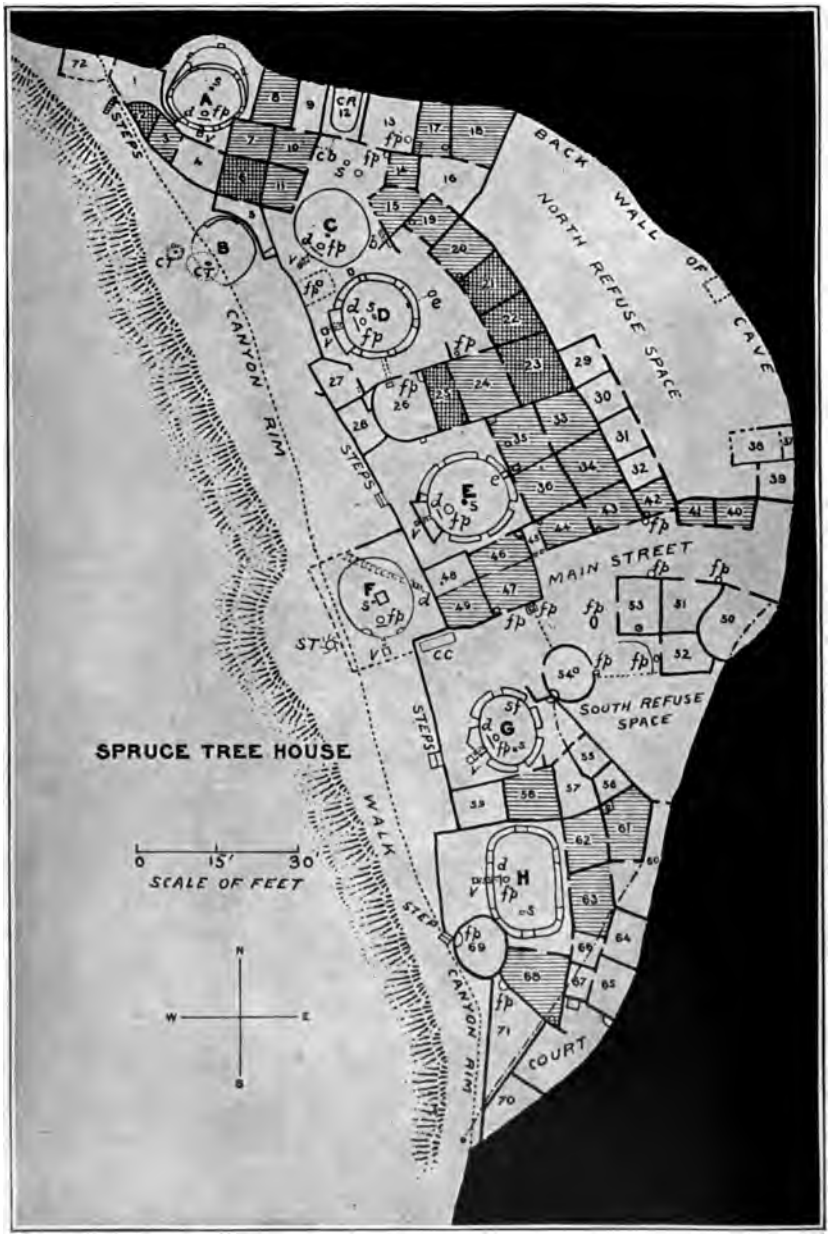
REPAIR OF WALLS.

The floors of all the rooms had been dug into by those in search of small objects supposed to exist below them, so that repairs were necessary in almost every room. This work was, however, of small account and comparatively easy, necessitating simply filling in cavities with adobe. The repair of foundations of walls which had been

[a] The lettering of the plazas corresponds to the designation of the related kivas.

SPRUCE TREE HOUSE FROM THE SOUTHWEST, BEFORE AND AFTER REPAIR.

SPRUCE TREE HOUSE, PLAZA D, BEFORE AND AFTER REPAIR.



PLAN OF SPRUCE TREE HOUSE.

A–H, ceremonial rooms or kivas; 1-72, secular rooms; 2, ossuary; 12, warrior's room. *cb*, corn bin; *cc*, corn-grinding place; *d*, air deflector; *e*, entrance to kiva from adjacent room; *fp*, fireplace; *s*, symbolic entrance to the underworld; ST, spruce-tree stump; V, ventilator

broken, or of holes that had been knocked through walls[a] to admit light was more difficult. Some of the last-mentioned breaks were left unrepaired, especially those where windows or doorways had been enlarged, rendering it no longer possible to discover the original form of the wall. Several high walls which were badly cracked were mended, and in one or two cases extensive repair work was done on walls that had sprung away from their attachment to the cliffs and were in danger of falling. It was not the custom of the ancient masons to firmly tie or bind the corners of their buildings so that in the process of time these angles had opened and the walls spread so far apart that huge gaps were visible. The walls would have fallen within a few years had not extensive repair work been done on several of these corners. Whenever it was possible leaning walls or those in danger of falling were braced by attachment to firmer standing walls, and in one or two instances it was necessary to construct a buttress breast high to hold up a wall that could not be otherwise saved. Almost the whole front wall of a large square room situated back of kiva *H* had fallen, leaving its upper part near the roof of the cave partly hanging in the air and almost destitute of support. This large gap was filled and the old wall is no longer in danger of falling.

The appearance of Spruce Tree House before and after excavation and repair is shown in Pls. I and II from photographs furnished by the Archæological Institute of America.

GROUND PLAN OF RUIN.

The most important addition to Nordenskiöld's ground plan of Spruce Tree House resulting from the author's excavations was uncovering the bounding wall formerly hidden from view under the débris on top of the talus in front of the rooms and kivas. Only fragments of this wall were evident when excavation work began, and the relation of kivas to plazas did not appear. An accurate knowledge of the walls in this region gives one a new and, for the first time, a correct idea of the general appearance of the ruin.

The front wall, which was replaced to a uniform height of 3 feet, was probably breast-high when the village was inhabited. It seems to have served as a protective wall, but it also formed one side of the plazas containing the kivas and other dwellings.[b]

NUMBER OF ROOMS AND DIMENSIONS.

The total length of Spruce Tree House was found to be 216 feet, its width at the widest part 89 feet. There were counted in the Spruce Tree House 114 rooms, the majority of which were secular, and 8 ceremonial chambers or kivas (Pl. III). Nordenskiöld numbered 80 of the former and 7 of the latter, but in this count he apparently did not differentiate in the former those of the first, second, and third stories. Spruce Tree House was in places 3 stories high; the third-story rooms had no artificial roof, but the wall of the cave served that purpose. Several rooms, the walls of which are

[a] It is reported that giant powder or dynamite was used by those who broke down these walls.

[b] As a rule, no buildings were constructed on top of a kiva, and their roofs were on the same level as the adjacent plazas.

now 2 stories high, formerly had a third story [a] above the second, but their walls have now fallen, leaving as the only indication of their former union with the cave lines destitute of smoke on the top of the cavern. Of the 114 rooms, at least 14 were uninhabited, being used as storage and mortuary chambers. If we eliminate these from the total number of rooms we have 100 inclosures which might have been dwellings. Allowing 4 inhabitants for each of these 100 rooms would give about 400 persons as an aboriginal population of Spruce Tree House. But it is probable that this estimate should be reduced, as not all the 100 rooms were inhabited at the same time, there being evidence that several of them had occupants long after others were deserted. Approximately, Spruce Tree House had a population not far from 350 people, or about 100 more than that of Walpi, one of the best-known Hopi pueblos.

GENERAL CHARACTER OF WALLS.

The walls of the rooms are constructed of dressed stone generally firmly set in adobe mortar, the pointing of which is sometimes strengthened by the insertion of small stones or fragments of pottery. The relatively large amount of mortar used by the ancient masons in the joints between stones is a source of weakness especially in those outside walls that were subjected to melting snow or driving sleet and rain. The interiors of those rooms situated under the cliff are but little worn; they were generally smoothly plastered, often left rough, but seldom needed repair. The one-storied rooms have as a rule lost their roofs, but many with two stories have them entire. The walls of the third story generally reach to the top of the cavern and its overhang serves as their covering. As a rule the form of all living rooms is square or quadrilateral on the ground floor. There are, however, triangular, pentagonal, and round rooms, as that near the south entrance to the ruin which may have served for defense. Fireplaces are ordinarily situated in one corner of the room, but in circular chambers they lie near the middle.

An examination of the walls of Spruce Tree House before repair made evident that the masonry of this cliff dwelling varies in excellence in different sections of the village. Some of the walls are constructed of nicely dressed stones carefully laid, tied at the corners, and smoothly plastered. These would be a credit to a white mason, but other walls are carelessly made of irregular stones, crudely laid and roughly plastered. These differences lead to the belief that many masons and plasterers, some of indifferent skill, others adepts, constructed these rooms. There are indubitable evidences that the walls of this cliff house were constructed at different times. None of the building stones are too heavy to be carried by one person, and the plastering shows in many places the imprints of human hands. No trowels or instruments for pressing mortar were used; the walls are not wholly plumb, nor are their surfaces perfectly plain, except in rare instances. The majority of building stones were obtained from the floor of the cave, but some were transported from the bottom of the canyon.

[a] On the author's plan of Spruce Tree House, from a survey by Mr. S. G. Morley, the third story is indicated by crosshatching, the second by parallel lines, and the first has no markings.

The best preserved walls, as would naturally be expected, lie far back in the cavern, sheltered by the overhanging cliff. The front walls of the village had been considerably mutilated, the thick mortar in the joints having been washed out by water dripping upon it from the canyon rim, and storms breaking upon them for centuries.[a] These sources of destruction have been most harmful and have done more to destroy the ruin than all other causes combined.

REFUSE HEAPS.

The very deepest part of the cavern was a large space destitute of rooms and not used for habitation, but apparently for a refuse heap or burial place. The fact that this large inclosure contains much débris of all kinds would indicate that it was probably used by the ancients as a dumping place in which the dead may have been buried. The refuse it contains has been pretty well dug over by "pottery diggers" who have found one or more desiccated bodies (mummies) and accompanying mortuary objects. To facilitate their work they have broken down large sections of rooms inclosing it to let in light or air. No systematic excavation was attempted by the author in this place, for a similar smaller refuse heap in the southern section was thoroughly cleaned out, and nothing of importance rewarded a very difficult week's work in the oppressive alkaline dust of this region. It is stated that turkeys were kept here, and bird droppings add considerable force to this theory. In the dry guano and rubbish that covers the floor of these caves, everything becomes desiccated, and several desiccated bodies (mummies) of small mammals and lizards were excavated; the refuse could not be moved without inhalation of dry dust which makes the work if not dangerous at least trying to the breathing organs. Evidences of isolated rooms, backed up against the rear cave wall, were found in the largest of these refuse places. It is quite impossible that these were human habitations. The roof of the cave is covered with a thick layer of smoke, showing that fires were often made in this section of the town.

CLASSIFICATION OF ROOMS.

Future visitors to Spruce Tree House will find that there are two or three types of rooms in the Mesa Verde cliff villages. One type is evidently a living room, rectangular or quadrilateral in shape, with well-plastered floor, in one corner of which is commonly a fireplace. Another type, called kivas, has a circular form, is subterranean, and, like all religious chambers, preserves ancient characters which are highly instructive. The secular rooms differ but little from those throughout the pueblo area, but the kivas present many significant variations in different geographical locations.

SECULAR ROOMS.

The rooms of Spruce Tree House are topographically divided into two groups by a court or street, running east and west, situated about midway between the north and south ends of the village. This street is entered from the plaza in which kiva *G* is situated, and has many fireplaces. In the northern division of the ruin there are five

[a] In laying their walls the aboriginal masons appear not to have pressed the stones together sufficiently to make a lasting union, but left thick layers of adobe between them which on exposure to water rapidly washed out.

kivas[a] and in the southern section three. The majority of the secular rooms, comprising the oldest, are situated in the northern division. The row of rooms bordering the street on the south end of the northern division contains some of the best walls in Spruce Tree House. The roofs and floors are well preserved and the walls show the best masonry in the whole ruin. The varied coloring of the plaster indicates that it was done at different times. It may well have been that this was the most aristocratic part of the village; certainly the houses here were constructed by the most clever masons and are now the best preserved. Their roofs and floors are in as fine condition to-day as when the place was inhabited. They have lateral doorways and well-made windows opening into the street. Entrances through upper or second floor doorways appear in some cases to have been accomplished by means of foot holes in the side of the wall, which are now visible. Notched logs were placed along the street to be used by visitors. The rooms are dark and were probably sleeping chambers, the fireplaces in the courts indicating that much of the cooking was done in the adjacent plaza and court.

The rooms of Spruce Tree House are well furnished with doorways, both lateral and vertical, the latter being very few in number. Some of the lateral openings are rectangular in form, slightly narrowed above; others are T-shaped. Many examples of the latter have the lower part filled in with masonry, reducing them to rectangular openings, and a few are entirely walled in, shutting off all entrances, a circumstance that would indicate that these rooms were abandoned while yet others were inhabited.

The sills of those doors which have a solid stone threshold are often much worn, showing frequent use. The lintels are commonly slabs of stone, but they may likewise be made of split sticks set in mortar. Similar sticks are likewise sometimes let into the sides of the doorways. The tops of many of the openings were partially arched over with mud, making a semicircular jamb that holds in place the flat stone which closed the opening. To secure in place the stone slab which closed the entrance the inhabitants used a stick that was held in place by eyelets made of osiers, one on each side. One of these doors was restored in its original form.

WOODEN BEAMS AND LADDERS.

It is remarkable how many old wooden beams and rafters still remain in their original positions in the Spruce Tree House. Their appearance indicates that the ruin never suffered any general conflagration. This abundance of beams is in marked contrast to the condition at Cliff Palace where, as pointed out by Nordenskiöld, there is a great scarcity of wood of any shape. There is nothing to indicate any great conflagration at Cliff Palace, and probably the wood was removed from its walls to be used in the construction of buildings in the neighboring cliff houses.[b] No fragments of ladders

[a] There is a numerical relationship between the population and the number of kivas which has not yet been satisfactorily worked out.

[b] There are many large cliff dwellings in the neighborhood of Cliff Palace that have never been described. A topographical archæological survey is much needed to determine how many ruins of all kinds there are in the Mesa Verde National Park. The best account we have of the ruins in this region is the excellent memoir, now somewhat incomplete, by Gustav Nordenskiöld, "The Cliff Dwellers of the Mesa Verde." This beautifully illustrated work is repeatedly referred to in the following pages.

or holes for the same were noticed in the floors of kivas. Charred rafters often reduced to charcoal in some rooms showed that the woodwork of some of the kivas must have been burnt and the change in color of the walls to a bright red indicates that the heat of the conflagration in these rooms was intense.

BALCONY.

The second tier of rooms of plaza *D*, as shown by the projecting ends of rafters, had a balcony, a small section of which can still be seen at the north end. Long poles formerly extended above these projecting beams, which they connected, and these poles supported wattlings and cedar bark covered with adobe. Along this platform the dwellers in rooms in the second story passed from doorway to doorway, and by it they were enabled to enter their own rooms. The evidences are that there were two balconies, one above another, at this point, but all traces of the floor of the highest of these except a few ends of rafters have disappeared. In a wall under this balcony, as was not uncommon in some cliff dwellings, there is found a stone projecting from its face which served as a step to reach the lowest doorway.

STONE BINS.

In one corner of a room back of plaza *H* there is a stone box or closet, the sides of which are formed of slabs set upright, on the upper edges of which is luted in place a cover having a square hole cut in one corner. This stone is not level, but inclines slightly outward from the wall. The use of this closet is unknown. A somewhat similar stone bin occurs in the northeast corner of plaza *C*, but, unlike it, has no covering slab and is situated in the corner of a plaza instead of a room. It seems natural to regard it as a corn bin. The meaning of the stone inclosures in one corner of plaza *G* is unknown.

CIRCULAR ROOMS.

The most interesting room in the south division is circular in form and stands at the right of the visitor as he follows the street from kiva *G* to the rear of the cave. It would at first sight seem from the shape of this room and the number and arrangement of holes in its wall that it was a bastion for defense. But these orifices admit of an explanation quite different from portholes. They may be the openings through which the sun priest watched the setting sun to determine the times for ceremonies. This room is somewhat isolated from the others and is furnished with rectangular openings like windows in front and rear, but as these openings are small and not easily passable, the probability is that the entrance was from above.

The ground outline of another circular room, which may possibly have been a tower, the existence of which escaped all previous observers, was traced at the south end of the ruin just beyond kiva H. From its position this room was believed to be a bastion for defense, so placed as to command the entrance to the village from its south end. The broken wall and fireplace of this room were repaired.

WARRIORS' ROOM.

One of the problematical rooms of Spruce Tree House lies in the northern division back of plaza *C* in the row east of its kiva. This small room has a lateral doorway, the sill, as are others, somewhat raised above the level of the plaza. The remarkable feature of this room is a banquette extending around its three sides, the remaining side or that opposite the door being the cliff or rear of the cave. This room resembles in certain particulars one in Cliff Palace, described by Nordenskiöld, but differs from his description in certain important details of structure. Its construction is so exceptional that one could hardly call it a living room and it is too elaborately made for a storage chamber. There is a shallow vertical passageway in the south corner near where the banquette joins the side of the cliff, which has some unknown meaning. Nordenskiöld, in discussing a similar room in the Cliff Palace, appears "to regard it as marking the transition to the rectangular estufa of the Moki Indians." As he points out, it differs "from the estufas in the absence of the characteristic passage and also of the six niches. Furthermore, they often contain several stories, and in every respect but the form resemble the rectangular rooms." It rarely happens that secular rooms are built above kivas; in fact, such a condition would be ceremonially an impossibility. The meeting places of warriors are exceptional in this regard, and from this and other reasons this chamber is considered by the author as a room of the warriors, or an assembly place for councils. This room adjoins that in which three child "mummies" are said to have been found and from which the author exhumed the skeleton of an adult. It needed little repair and was put in good condition.

DETAILS OF CONSTRUCTION.

In the middle of plaza *C* there is a rude-ware vase set in the floor with opening level with the surface. This is probably the cavity where offerings were ceremonially deposited, and corresponds in a general way with shrines in the middle of the Hopi plazas, one of the best known of which is the so-called *sipapû* used in the Walpi snake dance. The rooms at the south end of the ruin follow a ledge slightly elevated above the general level. Here are also small inclosures, or bins, constructed of stone, that remind one of storage cysts. Below these on the horizontal surface of the cliff there are broad depressions worn in the rock by rubbing stone weapons, like axes, and narrow grooves showing the impression of pointed implements. Here are also several good fireplaces, from the smoke of which the top of the cave has been considerably blackened. It was necessary to repair one of the storage cysts, which had been almost completely destroyed.

It was customary for the inhabitants of the cliff houses to lay an irregular wall, without mortar, on the tops of other walls. One of the high walls at the south end of the ruin has a collection of these stones, the use of which has led to considerable speculation. These rude walls served as wind or snow breaks.

MURAL PAINTINGS.

Several different pigments or colored sands were used in ornamenting the wall plastering, the most common colors being pink, yellow, brown, white, and red. The lower half of the rooms had a decorated

dado, colored dark red, which was finished on the upper edge with rows of dots interspersed with triangular symbols. On the edge of the dado of room 24 there are two figures that Nordenskiöld identifies as birds, but one of these appears more like a quadruped with recurved horns, reminding one of a mountain sheep.[a] On the higher part of another wall of the same room, which is painted white, there is a rectangular figure inclosing geometrical designs like those that occur on pottery. A terraced white figure on the wall of room 11 overlooking kiva *C* is like an inverted Hopi symbol of a rain cloud. Kiva *A* has on one of its buttresses two indistinct triangular figures. This symbol is not unknown to the Hopi women, who use it in ornamenting their house walls and as a design for decoration of their blankets. In these cases, however, the position of the triangle is inverted. The triangle symbol is commonly interpreted by them to represent the butterfly, but in some cases it is a highly conventionalized rain-cloud design. Its meaning among the people of Spruce Tree House may be the same.

LIKENESS TO PUEBLOS.

While there is a general similarity in the form and size of dwelling rooms in Spruce Tree House and those of inhabited Hopi pueblos like Walpi, there is a marked difference in the construction of their sacred rooms, called "kivas." This remark applies also to ceremonial rooms elsewhere in the Southwest, so that we might base subdivisions in our classification of the pueblo subculture areas on the form of their kivas. It may also be pointed out that owing to the conservation which is always present in the construction of everything connected with sacred edifices the kiva often retains the oldest or prehistoric architecture.

CEREMONIAL ROOMS OR KIVAS.

Spruce Tree House has eight kivas, seven of which are indicated by circles in Nordenskiöld's plan. These kivas are circular in form, subterranean in position, and in structure essentially alike; their structure is characteristic of those elsewhere on the Mesa Verde, in the McElmo, San Juan, and Chaco canyons. All Spruce Tree House kivas lie in front of dwellings except one, *A*, which fills an interval between the back wall of the cliff and buildings before it. On this and other accounts this kiva is believed to be one of the oldest in the village. As this kiva has double walls evidently those first built did not please the builders. The present and latest constructed kiva is circular and lies inside an older one, which has an oval shape. Both of these structures were excavated and put in thorough repair.

EXCAVATION AND REPAIR OF KIVAS.

When the repair work on Spruce Tree House was begun, the cavities of all kivas were full of rocks which had fallen from the neighboring buildings, and the plazas were covered above the level of the bases of adjacent rooms. The upper walls of the kivas breaking and falling had contributed to the mass of débris in the vicinity, so that although roughly indicated by depressions the walls and floors of the kivas

[a] In one place he calls them birds; in another, a bird and a mountain sheep.

were wholly concealed and their extent impossible to make out. (Pl. II.) All kivas except one, *B*,[a] were excavated to their floors and that portion of their walls which had fallen was built up to the level of the adjacent plazas. This repair work, especially in kiva *H*, where almost the whole wall of the neighboring eastern rooms had fallen, took much time and thought. Two kivas, *C* and *F*, were roofed and provided with ladders, following as a model that of a kiva in the "House with the Square Tower" (Peabody House), in which parts of the roof still remain.[b] In the restoration of this portion of the kiva the author fortunately had the aid of Mr. A. V. Kidder, who has specially studied the ruins of the Mesa Verde region.

The pedestals of all the kivas were repaired and when necessary pointed and plastered. Kiva *F*, near the stump of the old spruce tree[c] which gave the ruin its name, was roofed and provided with a ladder, but as the inner wall was considerably broken down and the pedestals destroyed the aboriginal method of construction of the roof could not well be followed in all particulars as completely as kiva *C*. On account of the exposure of this room to falling water from the edge of the cliff above the ruin, a drain was laid in Portland cement on the roof to convey water falling on the top of this kiva to the edge of the talus.

As the Spruce Tree House kivas average less than 15 feet in diameter, these chambers are considerably smaller than the quadrilateral Hopi kivas, from which they likewise differ in certain details of construction necessitated by their form, which has brought about an entirely different mode of construction of roofs.

CONSTRUCTION OF A KIVA.

Each kiva has two sections, a lower and an upper. (Pl. IV, fig. 1.) The lower part has walls about 3 feet high ending in a bank, on which at intervals there are six square buttresses which separate corresponding recesses and support the beams of the roof. Between these buttresses are left recesses, formed by the outside wall, which rises to the height of the roof. This lower wall, like all others, was plastered and shows marks of fire or smoke but not of a general conflagration. In the lower wall we found niches or small cubby-holes a few inches square, which were receptacles for paint, meal, or small objects. Each buttress has a peg on its top projecting into the kiva just under the roof; and in the surface of the banquette in kiva *C* there is set a small roughly made bowl, the rim of which is on the level of the bank.

The floor of the kiva is generally plastered, but in kiva *E* the solid surface of a rock was cut down on the west side several inches as a part of the floor. A little eccentric in the floor there is a circular pit, *F*, filled with wood ashes, which served as the fireplace. About halfway from this depression to the opposite wall of the room there is in the floor of every kiva a small hole, *G*, lined with a neck of a

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[a] An old cedar tree stands in the middle of this kiva.

[b] Nordenskiöld's figure of the roof of the kiva in the House with a Square Tower (Peabody House) is inexact. The logs of the roof are represented as laid simply one above another with their ends crossing and not in triplets as is described above. The spaces between logs built up as indicated by Nordenskiöld would be too large to be filled with sticks or cedar bark.

[c] This old tree was cut down by Nordenskiöld to determine the age of Spruce Tree House by counting the rings. Its gigantic trunk is now rotting in the canyon, but the stump is fairly well preserved, lying just west of kiva *F*. The roots from this spruce had penetrated into the kiva, causing considerable harm. A small scion of the old tree was planted in the talus near kiva *B* to take the place of the original spruce.

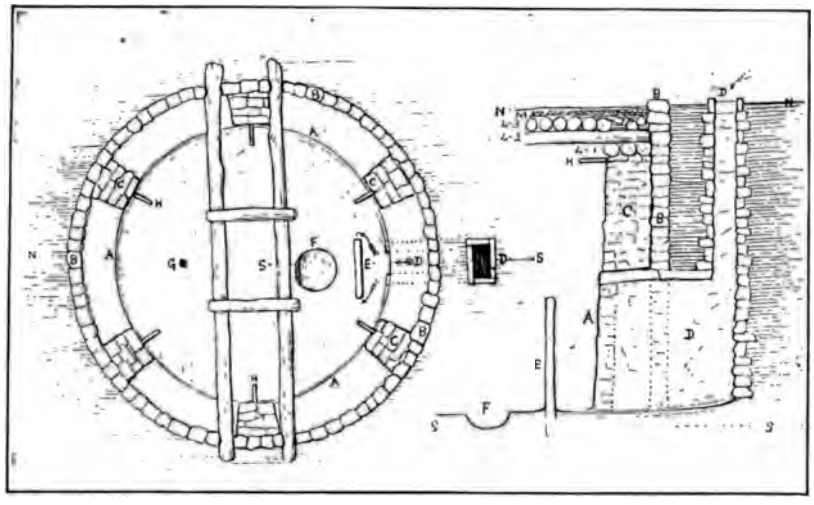


FIG. 1.—INTERIOR OF KIVA AND VENTILATOR.

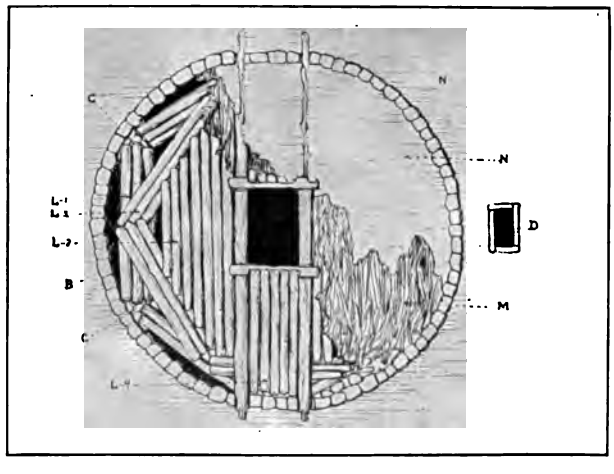


FIG. 2.—ROOF OF KIVA C.

A, inner wall; B, outer wall; C, buttress; D, external opening of ventilator in the plaza; E, air deflector; F, fireplace; S, symbolic opening into underworld; H, peg for ceremonial paraphernalia; L^1, first set of peripheral logs of the roof, L^2, second set of peripheral logs of the roof; L^3, third set of peripheral logs of the roof; L^4, logs in intervals between main beams of the roof; M, shredded cedar bast; N, mud covering of the roof; SS, cross section of ventilator. The arrow shows direction of the air currents.

roughly made bowl. This opening, which is barely large enough to insert the hand, represents symbolically the ceremonial entrance to the underworld, is the same as that which the Hopi call the *sipapû*. Around this hole, marking the place on the floor where altars were erected in ancient ceremonies, were performed archaic rites, and through it the priests addressed the gods of the underworld, even believing that they could communicate with the dead. The nature of ceremonies about the symbolic entrance to the underworld will be found by consulting the descriptions of the Hopi kiva rites elsewhere published by the author. All *sipapûs* and other features of structure of the kiva floors were put in good condition.

VENTILATORS OF KIVAS.

Between the kiva fireplace and the adjacent side of the room there is set in the floor an upright slab of stone, *e*, about 2 feet high, which is often replaced by a rectangular wall.[a] The side of the kiva facing this screen has a rectangular opening that communicates with a horizontal passageway and opens into a vertical flue, the external orifice of which is in the plaza or outside the outer wall of the kiva. The upright stone or wall served as a deflector which distributed the fresh air supplied to the kiva from outside the room by the flue above mentioned. This air entered the kiva through the vertical and horizontal passageway and was deflected by the upright stone around the room on the level of the floor. The smoke rose from fireplace and passed out the kiva through the hatch in the middle of the roof, fresh air being supplied to take the place of the heated air and smoke by the ventilator. (See Pl. IV, fig. 2, ventilator.)

The true use of this vertical passageway, which had puzzled all previous investigators, was detected by the author the first time he built a fire in kiva *C* after finishing its roof. A draft was found blowing down the vertical passageway strongly enough to extinguish a lighted match. In those kivas that are situated near the outer wall there was formerly an elbow in the vertical section of the fresh-air shaft at its outer end just below the floor of the plaza, so that this opening of the fresh-air box was outside the bounding wall of the plaza.

ENTRANCES TO KIVAS.

There are other openings in the circular wall of the kiva at the level of the floor, some of which are large enough to admit the body, and communicate with tunnels ample in size for passage. In the floor of one of these there are steps, and by means of these passageways one could pass under the plaza from the kiva to an adjacent room. A good illustration of these passageways as shown in the accompanying plan is found in *e*, kiva *E*. A person can enter a vertical passage in the corner of room 35 and descend by use of steps to a short tunnel that takes him through the opening into the kiva. There is a similar passageway which opens externally in the middle of plaza *C*. It can not be that the openings and passages above described were the main entrances, but rather private doorways for

[a] This screen, *d*, in Spruce Tree House kiva is not curved as shown in the diagram given by Nordenskiöld of another kiva.

priests on ceremonial or other occasions; the chief entrance was probably by means of a ladder through a hatchway in the middle of the roof.

CONSTRUCTION OF KIVA A.

The structure of kiva *A* is most remarkable, differing from the other seven ceremonial rooms of the Spruce Tree House. When first seen it had the appearance of one kiva within another, the first or largest being of oblong shape with remnants of a banquette showing two pedestals on the north side; the second or inner kiva being almost circular, was apparently the last occupied. In constructing the circular wall of that last mentioned the builders apparently utilized the southwest part of the larger room and those pedestals or buttresses that were situated in this section. Kiva *A*, as previously stated, is the only one built close under the overhanging rim rock, and is the only one with buildings in front of it. The roof of this kiva apparently formed a kind of plaza surrounded on three sides by houses, the wall of the cave forming the fourth.

There were never, apparently, any rooms above this kiva, but on one side a room of the second story is supported by a column—an exceptional feature in pueblo construction. The foundations of this wall are two logs curved to conform with the wall, and under the middle of these is the stone pillar. This feature, so far as the author knows, is unique, and this is the only instance among the cliff houses of the wall of a room supported by a pillar of masonry.

RESTORATION OF A KIVA.

In order to show as much as possible of the construction of the kiva and its relation to other buildings, two of these circular chambers, *C* and *F*, were roofed in aboriginal fashion, following for a model the kivas in Peabody House, where the roof of two kivas are partially preserved. From these reconstructions the visitor can readily see the structure of the prehistoric roof both from the inside and from without, where the relation to the adjacent plaza is evident.

The six buttresses with which every kiva is furnished stand on the banquette and support the logs which hold up the roof, but they are secondary to the main beams, which are two logs placed parallel to each other, spanning the top from wall to wall. These parallel logs are placed far enough apart to allow a hatchway between them, and their ends rest on the outer walls of the kiva, their upper side being level with the surface of the kiva.

The roof (Pl. IV, fig. 2, roof of kiva *C*) is constructed as follows: Three logs arranged side by side span the intervals between adjacent buttresses, their ends resting on the flat top of these supports. Extending from each set of these logs and resting on their middle are three other logs, *L* 2, also arranged side by side. These in turn support three others, *L* 3, as shown in the diagram. Upon the last mentioned rest other smaller logs, some of which are placed parallel with the two beams that span the kiva, others fill in the interstices between those already laid. Over these logs and beams are fitted wattlings, split logs, and cedar bark, over which is spread a thick layer of adobe, *which is so laid* as to bring the top of the roof to the level of the *adjacent plaza.* There is some doubt as to how high the kiva hatch

rose above the level of the top of the kiva, but in the restoration of kiva *C* two short beams connect the two parallel logs spanning the kiva, forming two sides of the square hatchway. These connecting beams support a number of split cedar trunks, the ends of which rest on the logs extending from the buttresses. These logs, like the remaining roof beams, are covered with mud and brought up to the level of the surrounding plaza.

Doors and door jambs of the two kivas, which were roofed, were constructed from planks, but the ladders and all supports of the roof were made from logs divested of bark and arranged in aboriginal fashion. This is the only attempt ever made to restore the complicated roof of a cliff-house kiva, and it is believed that from the educational standpoint the result is one of the most important in the repair work at Spruce Tree House.

Nordenskiöld finds a resemblance in the construction of the roof of a kiva to that of a Navajo "hogan." The problem of roofing a circular kiva and a round dwelling is the same, but has been solved in several ways by different peoples. There is no resemblance in the construction of the roof of a hogan and a kiva.[a]

SIGNBOARDS AND LABELS.

Spruce Tree House was treated as a museum specimen, the parts of which required many labels to explain. The author painted many legends on the different walls of the rooms to guide visitors. Especial attention was given to labeling kiva *G*, its different parts being indicated by numbers which refer to a large label painted in full sight on the kiva wall.

A signboard stating dimensions of the ruin, number of rooms, and kivas was placed in a conspicuous position on the large cedar of kiva *B*. Other signboards, "Balcony," "Wall Painting," and "Burial Chamber," were set up in appropriate places. Two old stairways, consisting of foot holes cut in the wall of the canyon, were also properly labeled. Dwelling rooms were numbered with black paint; when there were more than one tier of rooms bounded by the same vertical walls different stories were indicated as follows: Second story, 1/2; third story 1/3. The kivas were lettered *A*–*H*. It was the intention of the author to answer by these labels questions ordinarily asked by visitors. The numbering and lettering is to facilitate descriptions and references. The name "Spruce Tree House," printed on a brass plate, is firmly affixed to the outer wall of room 49.

APPROACHES TO RUIN.

In order to procure water for the mason's work, a trail 310 feet long was constructed along the edge of the talus from the north end of the ruin to the tanks that have lately been constructed near the spring at the head of Spruce Tree Canyon. This trail was found to have an easier grade than that crossing the canyon and approaching the ruin from the south side, thus rendering the ruin more easily accessible. It connects with that from the opposite side of the can-

[a] Mr. S. G. Morley, who camped with the author a short time in June, writes that the kivas of the Cannon-ball Pueblo, a rim-rock ruin in the McElmo, where he subsequently worked, are identical with those of Spruce Tree House. This evidence shows a homogeneity of culture in the prehistoric people who inhabited the McElmo and those of the Mesa Verde.

yon to the spring, so that one can ride horseback from the spring to the outer wall of the ruin. An approach of this kind was formerly impossible to any large ruin of the Mesa Verde Park. The old trail from the bottom of the canyon to the ruin, entering it at the north end, has been improved and, although steeper, will probably be found more convenient by visitors.

COLLECTIONS.

The rooms and courts of Spruce Tree House have been industriously dug over by "pottery seekers" in quest of "curios," so that few specimens were expected in the work undertaken by the author. Almost every floor had been opened and every possible hiding place where the ancients could bury their dead out of sight had been sought out and excavated. As it was currently reported that this ruin had been thoroughly rifled and had yielded many valuable specimens, it is regarded as remarkable that any specimens still remained.

Although the objects obtained were not very numerous, those that were found were instructive and form a good nucleus of what is hoped may be a large national collection from the Mesa Verde. Between 500 and 600 specimens were found, of which the most valuable were sent to the Smithsonian collection for study. A large number of the duplicates and all the heavier objects were placed under lock and key in kiva *F*. Shell objects were almost unknown, and no specimens of turquoise rewarded our work. The following account of a few of the most important objects may serve as an introduction to a more extended report which will be prepared later:

Several skulls and human bones were exhumed in the course of the author's work at Spruce Tree House. The best of the former, evidently not buried with much care, was taken from the fresh-air passage of kiva *D*. A fairly complete skeleton, with accompanying mortuary objects, evidently interred with care, was found in room 9 near where the desiccated bodies of children are said to have been formerly exhumed. There were several fragments of human bones scattered here and there where they had apparently been thrown or dropped by those who had dug open other burial places. Dried fragments of sinews, or even skin, adhered to some of these bones.

Several good axes were brought to light, among others one with the handle still attached. There was a very massive ax and several long, smooth ones, not unlike those called *tcamahias*, that form conspicuous objects on the Hopi altars at Walpi. Some of the stone mauls were very large and all have pits on opposite sides, to relieve the strain of the blow on the muscles of the hand and forearm. These were probably the implements with which the building stones were dressed, and, most remarkable of all, with which the rock floor of kiva *G* was cut down to a depth of over 6 inches at one point.

Two stone slabs with a notch in one edge were discovered. The use of these stones is not known, but they have been compared to sandal lasts. The large collection of stone grinders and hand stones for metates, many of which were too heavy to be brought down the mesa, was left in one of the kivas under lock and key. Among these were many metates and several paint mortars. Several whole pieces of decorated pottery with characteristic designs and many broken

fragments[a] which can be repaired were excavated at Spruce Tree House. The most unusual form and one as yet not figured or described from this ruin had a circular decorated cover that fits into a groove like a teapot lid. There is a rich symbolism in the decorated pottery, the majority of the figures being geometrical, life figures being very rare. A majority of the pottery objects are shallow food bowls, but there are likewise vases and dippers. A broken decorated ladle made of black and white ware has a rattle in the handle. Pottery disks with holes in the middle are interpreted as counters used in some prehistoric game. The collection of bone awls, needles, bone dirks, bodkins, and scrapers from Spruce Tree House is large and the forms varied. Among them is a bone dirk in its original sheath made of cedar bark and several good skin scrapers made of deer bones. There is likewise a bone whistle and bone ornaments. The stones used by some prehistoric medicine man to represent cardinal points in ceremonies for rain were found in kiva *H*.

Among the different kinds of bones of animals occurring in the refuse heaps those of birds predominate, and many of these were recognized as belonging to the turkey, which was apparently domesticated by the inhabitants of the Mesa Verde cliff dwellings.

A cloth headband having a loop at each end, in one of which is a string, is one of the best preserved specimens of woven work from the Mesa Verde. This remarkable specimen closely resembles one figured by Nordenskiöld, but appears to be somewhat better made. There were also fragments of cloth, bundles of twine, and netting, but no piece of cloth as large as that figured by Nordenskiöld was found in the excavations. The most remarkable wooden objects in the collection are planting sticks or dibbles, prayer sticks, and wooden slats which recall Hopi chief's badges. A spindle with wooden whorl shows that the Hopi method of spinning was identical with that in vogue in prehistoric Colorado. A lignite button is almost identical with a gorget found by the author in a ruin on the Little Colorado River in 1896. A small fetish representing a human being is a rarity among modern pueblos. A stone cylinder recalls a similar object which Nordenskiöld interprets as a fetish. The inhabitants of Spruce Tree House kindled fire in the same way as the Hopi and used the same kind of fire board and drill, one of which was collected.

Several fine sandals and basketry fragments were found in the refuse heap. A woven ring like those placed on the head to support jars of water and a wad of cornshucks, resembling a Hopi girl's chignon, are instructive specimens. If the latter be rightly interpreted, the girls in prehistoric villages of Mesa Verde wore their hair in whorls above their ears, as is the case with maids to-day at Walpi.

Several of the specimens collected at Spruce Tree House are practically identical with those used by the Hopi[a] twenty years ago. There was nothing showing a more advanced stage of culture.

J. Walter Fewkes,
Bureau of American Ethnology, Smithsonian Institution.

The Secretary of the Interior.

[a] No piece of pottery from Spruce Tree House has ever been figured. With the repaired specimens the author's collection from this ruin numbers 20 fine objects of this kind.

REPORT ON WIND CAVE, CRATER LAKE, SULLYS HILL, AND PLATT NATIONAL PARKS, CASA GRANDE RUIN, AND MINNESOTA NATIONAL FOREST RESERVE.

REPORT ON WIND CAVE, CRATER LAKE, SULLYS HILL, AND PLATT NATIONAL PARKS, CASA GRANDE RUIN, AND MINNESOTA NATIONAL FOREST RESERVE.

WIND CAVE NATIONAL PARK.

By the act of Congress approved January 9, 1903 (32 Stat., 765); a tract of land containing 10,522 acres in the State of South Dakota, 12 miles east of the town of Hot Springs and the same distance southeast of Custer, was reserved and withdrawn from settlement, entry, sale, and other disposition, and set apart as a public park, to be known as the "Wind Cave National Park."

The park is placed under the exclusive control of the Secretary of the Interior, who, among other things, is authorized to prescribe rules and regulations and establish such service as may be deemed necessary in its management and protection, and, in his discretion, to rent or lease the cave from which the park takes its name, and also parcels of land for the erection of buildings for the accommodation of visitors. The fund arising from such rentals is covered into the Treasury and made available for expenditure in the care and improvement of the park.

At the time of the creation of the park there were 10 entries covering lands therein, aggregating 1,519.15 acres, 5 of which, covering 799.76 acres, have since been canceled, and the remaining 5 entries have been found proper in all respects and patents issued therefor, as follows:

NE. ¼ NW. ¼ and NW. ¼ NE. ¼, sec. 35, T. 5 S., R. 5 E., Black Hills meridian; Jonathan C. West; F. C. 3003, patented December 31, 1904; 80 acres.

SE. ¼ NE. ¼ and lots 1 and 2, sec. 2, T. 6 S., R. 5 E.; George A. Stabler; F. C. 2666; patented September 11, 1905; 159.39 acres.

SE. ¼, sec. 2, same township and range; Susanna D. McDonald; C. E. 3770; patented December 10, 1895; 160 acres.

NE. ¼, sec. 11, same township and range; Kate M. Stabler; F. C. 2600; patented September 26, 1902; 160 acres.

NW. ¼, sec. 12, same township and range; Margarethe Drenkhahn; F. C. 2434; patented May 8, 1901; 160 acres.

This gives a total of 719.39 acres for patented lands remaining in the park, which, for administrative purposes, should be eliminated through appropriation by Congress for their purchase.

The State of South Dakota has completed making lieu selections of lands outside the park for school sections 16 and 36, located within the reservation, granted by the statehood act of February 20, 1899 (25 Stat., 676).

Mr. Seth Bullock, now marshal for the district of South Dakota, with the consent of the Attorney-General, has been continued in general charge of the reservation, in an advisory capacity, and the

superintendent, Mr. William A. Rankin, confers with him in regard to its administration. This course has aided very much in the effective management during the past season.

A revocable privilege has been granted to the wife of the superintendent, in the absence of other accommodations in the park, to furnish meals to tourists at 50 cents each, which service has proved very satisfactory in the past. The superintendent recommends that the old building heretofore occupied for serving these meals, which was constructed in 1893 by John Stabler and sons, and is now in a very dilapidated condition, be torn down and removed. He suggests that some one willing to construct a good, substantial hotel in the park be given the privilege to do so.

During the season eight permits were granted for the transportation of passengers in and through the reservation, at the rate of $50 per vehicle, such fee being charged in the case of liverymen, outfitters, and others operating for profit. One of these permits was for automobile transportation.

No applications were received for the driving of cattle or other stock through the park.

The first regulations for the government of the Wind Cave National Park were promulgated June 10, 1908, and provide, among other things, as follows:

1. It is forbidden to remove or injure the specimens or formation in and around the Wind Cave, or to deface the same by written inscription or otherwise, or to injure or disturb in any manner or carry off any of the mineral deposits, specimens, natural curiosities, or wonders on the government lands within the park.

2. No person shall be permitted to enter the cave unless accompanied by the superintendent or other park employee, or by competent guides.

Regulations corresponding to those heretofore issued for the other national parks, providing for the impounding of loose live stock found in the Wind Cave National Park, were also promulgated. Settlers and stock owners in the vicinity have protested against the execution of such regulations, claiming that they have always used the park lands as a free range, and, as the park is not fenced, would find it very difficult to keep their stock outside of the boundaries. Such persons were given a reasonable time to remove the trespassing stock, and the enforcement of the impounding regulations was temporarily suspended.

It will apparently be necessary to construct a fence entirely around the park as a protective measure against trespassing stock, and an appropriation for such purpose is recommended.

There have been no forest fires in or near the park during the year.

Wild animals are quite numerous, especially the prairie wolf. Others are the black-tail deer, white-tail deer, badger, prairie dog, skunks, squirrels, and porcupine, the last named doing a great deal of damage to trees. There are also a few grouse, quail, ducks, and numbers of hawks, eagles, robins, thrushes, woodpeckers, and magpies.

About $1,500 was expended during the past fiscal year for improvements as follows: Repairing roads and bridges, repairing fences, leveling up trails in Wind Cave and repairing stairs, opening up new chambers in the cave, purchase of flag and flagstaff, etc.

It is reported that the roads to the southern entrance are in good condition, but need widening out to allow room for the passing of

teams. The bridges are also in fair condition, but the superintendent suggests the use of building stone to be found in the park for replacing the piling under the spans with stone abutments.

During the year the registry of visitors to the park showed a total of 3,171, an increase of 420 over the number of tourists in 1907. None of this number camped in the reservation for more than one day.

An estimate for an appropriation of $5,400 for the protection and improvement of the park has been submitted to Congress. This includes salary of the superintendent and $2,800, the estimated cost of fencing the park to prevent depredations by live stock.

CRATER LAKE NATIONAL PARK.

By the act of Congress approved May 22, 1902 (32 Stat., 202), the tract of land bounded on the north by the parallel 43° 4′ north latitude, south by 42° 48′ north latitude, east by the meridian 122° west longitude, and west by the meridian 122° 16′ west longitude, having an area of 249 square miles, or 159,360 acres, in the State of Oregon, and including Crater Lake, was reserved and withdrawn from settlement, occupancy, or sale under the laws of the United States, and dedicated and set apart forever as a public park or pleasure ground for the benefit of the people, to be known as "Crater Lake National Park."

The act setting aside these lands for park purposes differed from legislation creating other national parks in that it provided, among other things, that the reservation should be open "to the location of mining claims and the working of the same." It was not believed, however, to be the purpose of this provision to extend the mining laws to the reservation without limitation, but only to authorize the location and working of mining claims therein in such manner as not to interfere with or prejudicially affect the general purpose for which the reservation was established. The regulations for the government of the park, which were reissued June 10, 1908, clearly define the conditions under which this privilege is to be exercised.

The Geological Survey has, at the request of this department, undertaken a topographic resurvey of this reservation, with a view to securing, for administrative purposes, a map which will be authentic in every particular.

Since the date of the superintendent's last report, various improvement work on buildings and fences was completed, also the installation of the hydraulic ram for pumping water to the superintendent's office and residence, and the making of a ditch to carry off the waste water from the ram and for irrigating the surrounding grounds.

Upon the approach of the winter season, in November, the boat on Crater Lake and all tools and implements were properly housed, the flooring was removed from bridges, and the fences braced to withstand the weight of the heavy snows, which commonly fall to a depth of 6 or 8 feet at the south line of the park and from 12 to 20 feet at the superintendent's residence. November 22, 1907, the superintendent and his family left the reservation, but a few visits were made thereto during the winter months.

In May of the present year the superintendent returned to his residence in the park, finding all property in good condition with

the exception of the barn, which had been injured by the wind or lightning. Park Ranger H. E. Momyer was employed to assist in the management of the reservation during the tourist months.

Work was then inaugurated on improvements. Two temporary structures were erected for the use of workmen, roads and trails to a total of about 20 miles repaired and improved, the barn repaired, and about 2 miles of fence constructed to inclose pasture and meadow lands. The roofs of buildings are made with three-fourths pitch in order that the snow may slide off instead of crushing them in.

The road system is as follows: One road entering the park at the southern boundary and running in a northwesterly direction along the Anna Creek Canyon a distance of 8 miles, and terminating at the Crater Lake post-office; a second entering the reservation from the west, running in a due easterly direction, and terminating at the same point; and a third beginning at the post-office and running northeasterly a distance of 5 miles to the rim of the crater. These have been kept in good condition for travel by all kinds of vehicles, but the superintendent reports that further improvements, such as widening, straightening, and providing turnouts, are necessary.

There are four trails in the park at the present time; one leading from the rim of the crater down to the waters of Crater Lake, with a descent of 901 feet in a distance of 2,365 feet; one from the superintendent's headquarters to the pinnacles on Sand Creek and Mount Scott, and trails from headquarters to Union Peak and Bybee Creek. The first-mentioned trail is much used by visitors, and it is important that it be kept continually in a good condition. Iron posts and 2,400 feet of cable were purchased last year for the improvement of this trail, but the small appropriation for the current year would not permit of the utilization of such material, and only temporary repairs could be made. The other trails are at present little more than mere tracks of horses from one point to another.

The superintendent suggests that the trail to Sand Creek and Mount Scott should be speedily converted into a good wagon road, to fill the demand of visitors that the beautiful scenery be made accessible; also that new trails be constructed along the rim of the crater to the Watchman and Glacier Peak, and from the present wagon road to the crater, to Crater Peak, and down along Sun Creek.

At the time of the creation of the park there were 15 land entries, covering 2,395.33 acres, 12 of which, totaling 1,914.22 acres, have been patented; homestead entry No. 2415 (160 acres), of John Fitzgerald, for S. ½ N. ½ of sec. 17, T. 32 S., R. 7½ E., was canceled by General Land Office letter of November 13, 1908; homestead entries Nos. 2620 and 2660, of John Wallace Dickey and Louis Stanosheck, totaling 321.11 acres, are still intact upon the General Land Office records pending report from the local land office on adverse proceedings brought against the same. Included in the total of 2,395.33 acres is a considerable portion of homestead entry No. 2415 and timber land entries Nos. 2116 and 2120 (now patented), which extend beyond the park boundary line.

The title of the State of Oregon to school sections 16 and 36 within the park boundaries had been extinguished before the creation of the reservation, by selection of other land in lieu thereof, except a tract containing 192.20 acres in the N. ½ of sec. 16, T. 32 S., R. 7½ E., which has since been disposed of by the State to private parties.

The department recommends the condemnation and purchase of all private claims with a view to better administration. The superintendent believes that in the near future summer resort homes may be established upon such lands, which will increase the difficulties of administration and also add to the aggregate sum which the Government will eventually have to pay the owners.

The following permits were issued during the season for the driving of stock through the park: In May to Henry Gordon, 250 head, en route to Fort Klamath; in August to A. V. Morrison, of Trail, Oreg., 12 head, but the stock has not yet been taken through; and in September to J. C. Pelton & Co., 100 head, en route from Prospect to Fort Klamath, which stock also failed to pass through.

The number of valuable game animals appears to be increasing. Deer and black bears, lynx and coyotes were plentiful during the past summer, and panthers were seen in small numbers. There have been no depredations by these predatory animals. Of the smaller game and birds, there are squirrels, chipmunks, pine martins, fishers, grouse, timber pheasants, oriole, black-headed jay, camp robber or Rocky Mountain jay, and the snowbird. Broods of young ducks have been observed upon Crater Lake, also flocks of wild ducks resting from their migratory flights, but it is thought the elevation of the lake, 6,177 feet above sea level, gives a climate too cold for the natural habitat of wild waterfowl. When the snow falls, all game animals, with possibly the exception of the black bear and small fur-bearing animals, as well as all birds, migrate to a lower and warmer climate. In view of the fact that no wintering grounds are now available in the park, the superintendent recommends the extension of the park boundaries to include a lower section of the country on the slope of the Cascade Mountains, to afford the necessary protection to game.

Fishing has been permitted in Crater Lake from July 1 to September 30 with hook and line, each person being limited to five fish in one day. The only species in Crater Lake are the rainbow and lake trout; there were no fish in the lake naturally, but these were planted about twenty years ago, and the increase has not been encouraging. In Anna Creek, below the falls, there is the Dolly Varden trout. There are no fish in the other park waters, and the Secretary of Commerce and Labor has been requested to investigate the conditions, and if practicable have the Commissioner of Fish and Fisheries supply some good varieties for Crater Lake and all other waters in Crater Lake National Park.

No forest fires have been reported during the past year, with the exception of a small one which started in the vicinity of the Pinnacles on Sand Creek about September 1. This was gotten under control and extinguished before it had gained much headway.

Accommodations are provided for tourists by Mr. Will G. Steel, of Portland, Oreg., under license from this department, at camps maintained near the superintendent's residence and at the lake. Approximately 500 persons were cared for during 1908, but few of this number came into the reservation by the transportation service operated by Mr. Steel, the great majority using private conveyances. In connection with the wagon transportation and camp privilege Mr. Steel was also permitted to place a gasoline launch and a number of rowboats upon the lake.

A registration book was kept to ascertain the number of visitors to the park, but for various reasons not half of the number were registered. The approximate total for the season, including campers and transient tourists, has been placed at 5,275, which would indicate that the popularity of the park is increasing from year to year.

Estimates have been submitted to Congress for the ensuing fiscal year, as follows: Salaries of superintendent and two temporary park rangers, and allowance to superintendent for the keep of one horse, $1,965; construction and repair of roads and trails, $15,800; construction and repair of bridges, $2,500; miscellaneous, $1,480; total, $21,745.

SULLYS HILL PARK.

This reservation, set aside by executive proclamation dated June 2, 1904, under the act approved April 27, 1904 (33 Stat., 319), contains about 780 acres. It is located on the south shore of Devils Lake, North Dakota, having about 2 miles of shore line, with its western boundary 1 mile east of the Fort Totten Indian School. Inasmuch as no appropriation has been made for the care and protection of this reservation Mr. Charles M. Ziebach, in charge of the Indian Industrial School, Fort Totten, has been continued as acting superintendent, and required to exercise the necessary supervision and control over the same until appropriation is made therefor by Congress.

The tract is well wooded and has an ample supply of water and many rugged hills, among which, on the western boundary, lies what is known as "Sullys Hill." In the southwestern part is a small body of water known as "Sweet Water Lake," west of which the surface is generally level and the soil good.

Approximately 50 persons camped in the park for three days or more during the past summer, and 200 spent one day in sight-seeing.

The steamboat landing is at least 2 miles from the park, and the acting superintendent recommends the building of a dock to allow boats to land within the park limits, to make it more accessible for visitors. Until this in done, as well as repair work upon roads, construction of new ones, the walling up of springs, etc., the reservation is not likely to be patronized to any extent. There are no buildings or improvements of any kind in the park.

An estimate for an appropriation of $3,000 for the protection and improvement of the park has been submitted to Congress.

PLATT NATIONAL PARK.

By the acts of Congress of July 1, 1902 (32 Stat., 641), and April 21, 1904 (33 Stat., 220), 629.33 and 218.89 acres, respectively, at the town of Sulphur, Okla. (then Indian Territory), were segregated as the "Sulphur Springs Reservation," which designation, by joint resolution approved June 29, 1906, was changed to "Platt National Park."

The park, with a total area of 848.22 acres, extends in irregular form a distance of approximately 3 miles from northeast to southwest along Sulphur Creek, including a portion of Rock Creek, which empties into Sulphur Creek, and has a circuit of 9 miles.

Within the park are 33 known mineral and 2 nonmineral springs. The principal groups are the Bromide and Bromide-Sulphur springs

in the southwestern part of the park, Beach and Pavilion springs in the northwestern corner, and the Wilson group in the southern part. Sulphur springs predominate, but there are also bromide, soda, and iron varieties. The Antelope and Buffalo springs, nonmineral in character, are situated at the extreme northeastern end of the Platt National Park, with an elevation of 1,083 feet above sea level, and an approximate discharge of 5,000,000 gallons daily into Sulphur Creek.

The following is a statement of the mineral springs which have been to some extent developed and improved, together with the estimated daily flow in each case:

	Gallons.
Bromide Springs (3)	275
Bromide-Sulphur	250
Taff or Black Sulphur	500
Hillside	129,600
Pavilion Springs (7)	200,600
Beach Springs (3)	125,000
Wilson	1,000
Jericho	200

The amount of water per capita used on the premises, or taken away for individual use, averages one-half gallon daily. This statement applies to all but the Wilson and Jericho springs, from which the amount taken is inconsiderable.

Regulations for the park were promulgated by the department June 10, 1908, those theretofore in force having been found totally inadequate to properly protect the park. Section 5 provides as follows:

> No person shall remove from any of the bromide, iron, or soda springs more than one gallon of water in any one day, nor remove from any of the other springs more than five gallons in any one day, nor shall any water be taken therefrom for commercial purposes except in pursuance of a license issued by the Secretary of the Interior. Whenever in his judgment the circumstances warrant, the superintendent may prohibit the use of the waters of any of the springs in the park other than for immediate drinking purposes at such springs, the facts in such case to be reported to the Secretary of the Interior.

In spite of all efforts to prevent it, the superintendent reports that small quantities of water have been taken surreptitiously from the Bromide, Beach, and Pavilion springs. No water has been taken by permission for commercial purposes. On account of the popularity of Bromide Spring, and the small daily flow, it has been necessary to restrict the amount of water which can be taken by each individual, and early in the fiscal year a watchman was placed at this point to oversee the distribution of the water and maintain order in the vicinity.

The number of arrests for all causes was 11, the cases being disposed of as follows: Bound over to await action of grand jury, 2; convictions, 2; expulsions from park, 2; admonished and discharged, 7. The authority given under the new regulations is broader than before, and furnishes the means for punishing or restraining a certain lawless element in the vicinity of the park. The Department of Justice, upon the request of the Interior Department, appointed Mr. G. E. Nicholson as a United States commissioner, to reside at Sulphur, Okla., and persons violating the rules and regulations can now be brought before him and, if the offense warrants, be bound over for the action of the grand jury, which meets only at points remote from the park; this is a great improvement and the effect

should be salutary. The department has been advised of attempts to blackmail persons in the Platt National Park, impersonation of officers and threats against the lives of the rangers because of the enforcement of the regulations, and such cases have been brought to the attention of the United States attorney for the eastern district of Oklahoma.

The superintendent's office and residence buildings have been connected by telephone with the quarters of the employees in different portions of the park, a chain of incandescent lights was installed in West Central Park, and the work of protecting the park from damage, nuisances, and forest fires has thereby become more effective.

Approximately 6,000 head of domestic animals were driven through the park in the daytime. Stockmen, when marketing their animals during the extreme hot weather of summer, usually make night drives, intending to reach Sulphur in time to ship early the following day. The number given does not include the herds passing at a late hour in the night. The time of the park rangers has been largely taken up in removing trespassing live stock from the park. A few dairymen and stock owners living near by have made a practice for years of allowing their animals to graze therein, and have resented all efforts to prevent them. The number of domestic animals driven off of the reservation was, by actual count, 11,041, and to perform such service the rangers rode 4,398 miles. To overcome this undesirable condition the department recently authorized the construction of a suitable fence to inclose the Platt National Park, at an approximate cost of $2,500, provision to be made for suitable openings, etc., and lanes crossing the reservation, and work on such improvements is practically completed.

The superintendent reports that special pains have been taken to protect the animals and birds and to prevent abuses of the privilege of fishing in the park. Fishing is now permitted with hook and line, and this privilege appears to have popularized the resort to a considerable extent. The following species of animals, birds, and fishes make the park their home: A few wolves and wild cats, rabbits, squirrels, badgers, porcupines; quail in great abundance, redbirds, larks, doves, blackbirds, and common varieties, blue jays, mocking birds, snipe, pigeons, plover, birds of paradise, robins, yellow-hammers, kingfishers, hawks, and eagles; black bass, a few trout and red horse, sunfish, suckers, and catfish. The pure cold water of Sulphur Creek is reported as especially adapted to the propagation of the more desirable species of edible fish, such as trout and black bass. The stocking of such stream with these species would no doubt add to the attractiveness of the park. The Secretary of Commerce and Labor has been requested to investigate the conditions, and, if practicable, stock Sulphur Creek with some good varieties of fish from the Bureau of Fish and Fisheries.

Besides the office building of the superintendent, there are 5 residence buildings for employees and 5 pavilions, the latter located at Bromide, Hillside, and Seven springs, and at an artificial spring near the "Vendome." There are 10 rest houses near the more frequented springs in West Central Park and on the public camp grounds. Most of the buildings and a few of the pavilions are in need of repairs and painting.

The superintendent has submitted an estimate of $250 for deflecting the course of the road which now crosses the park at its widest point, so as to give an easier grade, obviate the expenditure of over $600 for a culvert at Sulphur Run, and abate the dust nuisance at the springs and the residence of the superintendent. The present grade of this road is 6 per cent in certain portions; it washes badly and requires frequent repairs. The construction of the "Brookside" trail, which meanders along Sulphur Creek, crossing and recrossing in the vicinity of the principal falls, has made this the second greatest thoroughfare of the park.

The success of the wire suspension bridge recently constructed at Bromide Springs exceeds the expectations of its most enthusiastic advocates. It carries an average of 500 persons daily, and during the three months of its constant use has not needed a moment's care or attention. The superintendent reports receiving an inquiry from London in regard to it. The Davis Avenue Bridge, upon which certain temporary repairs were made last winter, is again sagging and becoming unsafe. The department has authorized preliminary work on the construction of a suitable bridge to replace this structure, and also to place a stone arch bridge with turret effects across Sulphur Creek, in West Central Park. The estimated cost of these two bridges is from $10,000 to $11,000.

The salaries of the park force aggregated $5,780 for the fiscal year ended June 30, 1908. The following improvements, repairs, etc., were made during the same period: Improvement of springs, creeks, fords, falls, etc., $1,057.74; construction and repair of bridges, $1,213.58; surveys for sanitary sewer, $761.90; domestic water supply, $674.09; repairs to buildings, $590.67; filling holes, removing débris and underbrush, mowing weeds, and construction of trail, $429.89; and miscellaneous service, repairs, etc., $607.07, a total of $5,334.94.

The Bland Hotel, which was appraised and paid for by the Government under the act of April 21, 1904, after the segregation of the lands now included in the park, was this year purchased and removed by C. E. Higinbotham, of Sulphur, the contract price being $7,011. It had become dilapidated and a danger to visitors.

Efforts have been made by the department to secure proposals for privileges in the park, for the convenience of the public, but, although the field appears to be a very promising one for privileges such as rowboats on Rock Creek; refreshment stands, including the sale of cigars, daily papers, souvenirs, etc.: making and selling photographs; and the taking of water from the Beach or other mineral springs for bottling, shipment, or sale; only three licenses have been granted—one for a refreshment stand, to W. O. Bourland, at a nominal rental for the first year, and two photographic privileges, the latter not including the occupation of any ground in the park. These were issued at the beginning of the current fiscal year, and no other meritorious applications for concessions have been received. Within the past two years the mineral waters were shipped from Sulphur in considerable quantities, and fair prices realized, and there is apparently no reason for thinking that the demand has diminished, if we consider the reputation which some of the springs have gained for their medicinal qualities.

The revenues for the year were practically nothing, if the sale of the Bland Hotel be excepted. The balance available July 1, 1908, for protection, preservation, and improvement of the Platt National Park, was $27,777.36. It is probable that the current year will reduce the available funds to about $5,000.

Estimates were submitted to Congress last year for the construction of a sewer system, with laterals to intersect others connecting with the city of Sulphur's system to carry off of the reservation the drainage and sewage, which, owing to the topographic conditions, now run into and contaminate the creeks and springs of the park. The approximate cost of the work is $30,000, of which the city should be required to pay one-half. No appropriation was made, and the matter has again been presented in the estimates for the next fiscal year.

In 1907 the city of Sulphur was granted temporary permission to take water from Sulphur Creek, just below what is known as "Little Niagara," a cascade, for domestic water supply and fire protection, to the extent of 100,000 gallons of water daily. The provision was made that the city should construct a 500,000-gallon storage reservoir outside the park limits, but this requirement has not yet been complied with. It is stated that the city is in financial straits, can not get the money to make such improvements, and will endeavor to have Congress authorize the use of this water permanently and with less restrictions.

Approximately 25,000 persons coming by rail and 1,000 by wagon, the latter camping for three days or more, have visited the park during the past fiscal year. As shown by the records at Bromide Springs, the attendance there was 106,332, and no record was maintained for the first two months of the year. Many of these were citizens of Sulphur, visiting the springs each day, who were counted each time. Although no record was kept at other springs, it is probable that there was a still greater attendance at the Pavilion Springs, which are somewhat closer to the city.

The season opened later than usual, notwithstanding which the number of visitors exceeded all previous records. The park and the city of Sulphur have recognized advantages for the holding of general conventions, religious, educational, fraternal, and other gatherings. These assemblages have been permitted during the past year to occupy suitable grounds for the purpose in East Central Park, after receiving permission from the superintendent, which is granted under certain restrictions imposed by the department for the welfare of the park. The accommodations have repeatedly been taxed to the utmost.

A topographic survey of the Platt National Park, which will show the location of springs, the drainage, etc., has been inaugurated by the Geological Survey at the instance of the department, with a view to the production of complete and authentic maps of the reservation for administrative purposes. The name of Sulphur Creek has, by authority of the United States Board on Geographic Names, been changed to "Travertine."

In addition to matters heretofore covered, the superintendent makes the following recommendations:

A stone and iron building of two rooms near the superintendent's *office for* a calaboose, or holdover, for men and women arrested and *awaiting trial* before the United States commissioner.

An electric-light plant for the park, operated by water power from Antelope and Buffalo springs.

A fish hatchery near the head of Sulphur Creek.

The employment of a scientific forester for the reforestation of denuded portions of the park.

The establishment of a summer camp for a squadron of cavalry from Fort Sill or some other convenient military post.

The expenses attendant upon the management of this reservation, and the carrying into effect of necessary improvements to springs and roads, and the construction of bridges, etc., have so depleted the park revenues that an appropriation by Congress in the near future will be absolutely necessary. No appropriation has heretofore been made for the park, but an estimate for the protection and improvement thereof for the fiscal year ending June 30, 1910, in the sum of $20,000, has been submitted to Congress.

CASA GRANDE RUIN.

This reservation is located near Florence, Ariz., about 18 miles northeast of Casa Grande station, on the Southern Pacific Railroad, and contains about 480 acres. It was set aside by executive order dated June 22, 1892, under the act approved March 2, 1889 (25 Stat., 961).

Casa Grande is an Indian ruin of undetermined antiquity, which was discovered in 1694 by Padre Kino, a Jesuit missionary. This great house is said to be the most important ruin of its type in the Southwest, and as such it has strong claims for archæological study, repair, and permanent preservation. It is built of puddled clay, molded into walls and dried in the sun, and is of perishable character. The main building was originally five or six stories high and covered a space 59 feet by 43 feet 3 inches. The walls have been gradually disintegrating, owing to the action of the elements. A corrugated iron roof has heretofore been erected over this building to protect it, so far as practicable, from further decay.

Surrounding Casa Grande proper is a rectangular walled inclosure or "compound," having an area of about 2 acres. In this inclosure, which has been called "Compound A," there have recently been excavated a number of buildings or clusters of rooms, and others are known to exist which have not yet been excavated. Two other compounds have been discovered and designated, respectively, "Compound B" and "Compound C." The former has been the scene of operations during the past year, but the latter has not yet been excavated and is still in the form of a mound. The three compounds together constitute what is known as the "Casa Grande" group of ruins.

The custodian, Mr. Frank Pinkley, who resides on the reservation, reports that the ground plan of the ruins was increased by some 57 or 58 rooms, a number of large plazas, and surrounding walls, making the total number of rooms now open on the ground floor over a hundred, and as the result of the last two winters' work by Doctor Fewkes, of the Bureau of Ethnology, the points of interest to visitors have been materially increased.

Mr. Pinkley recommends that appropriation be secured for the erection of a museum building near the Ruins to shelter the results

of future excavations, and to place the household utensils, war and agricultural instruments, and other objects belonging to the prehistoric people in proper relation to the architecture and environment, to facilitate the study, from a scientist's point of view, of any one phase of the aboriginal life.

There are to the east of the Casa Grande Ruin two other groups of ruins, which the custodian reports are on land thrown open to settlement, and one of which is endangered by the proposed construction of a railroad, and he suggests that such ruins be added by Congress to the reservation now existing.

An appropriation of $3,000 was made in the sundry civil act of March 4, 1907, for the excavation of the Casa Grande Ruin, to be expended under the supervision of the Secretary of the Smithsonian Institution.

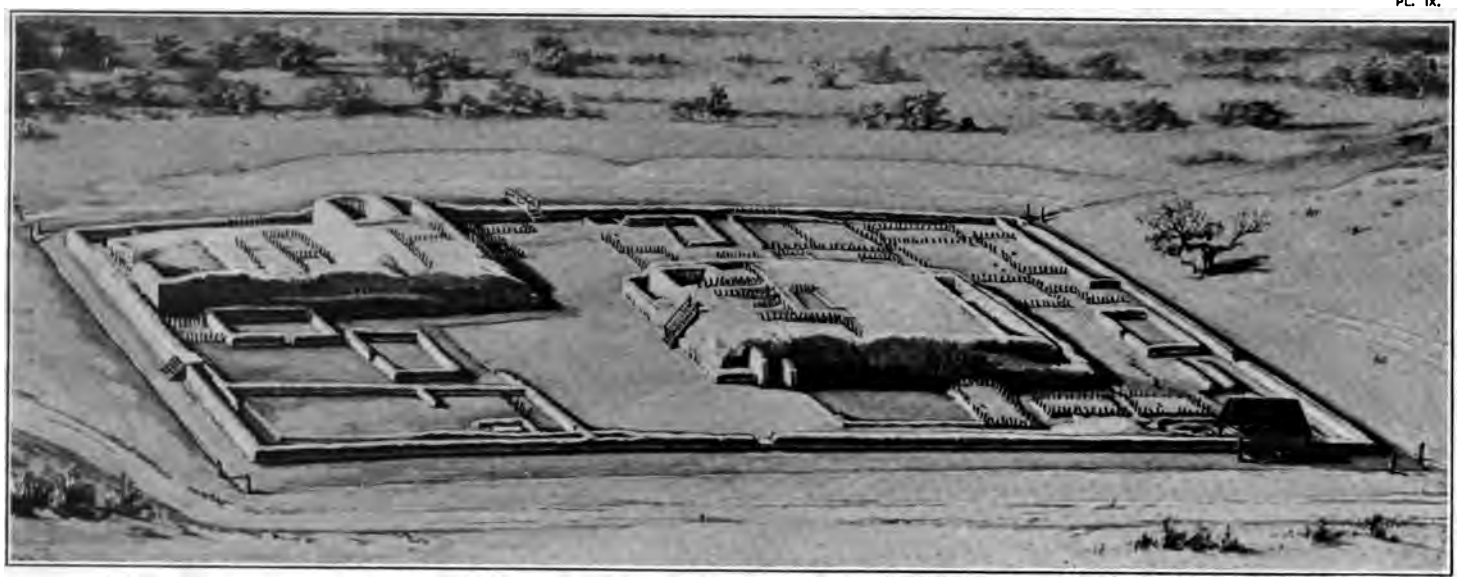
The following excerpt has been furnished by the Secretary of the Smithsonian Institution, from the report of Dr. J. Walter Fewkes, on the excavation and repair work at Casa Grande Ruin, in 1907–8:

During the last year the appropriation for the continuance of the excavation and repair of Casa Grande, in Pinal County, Ariz., was disbursed by the Smithsonian Institution, through Dr. J. Walter Fewkes, of the Bureau of American Ethnology. A technical report on the scientific results of this work will be published later by the institution. A few general results that are of popular interest from the educational point of view are here briefly considered.

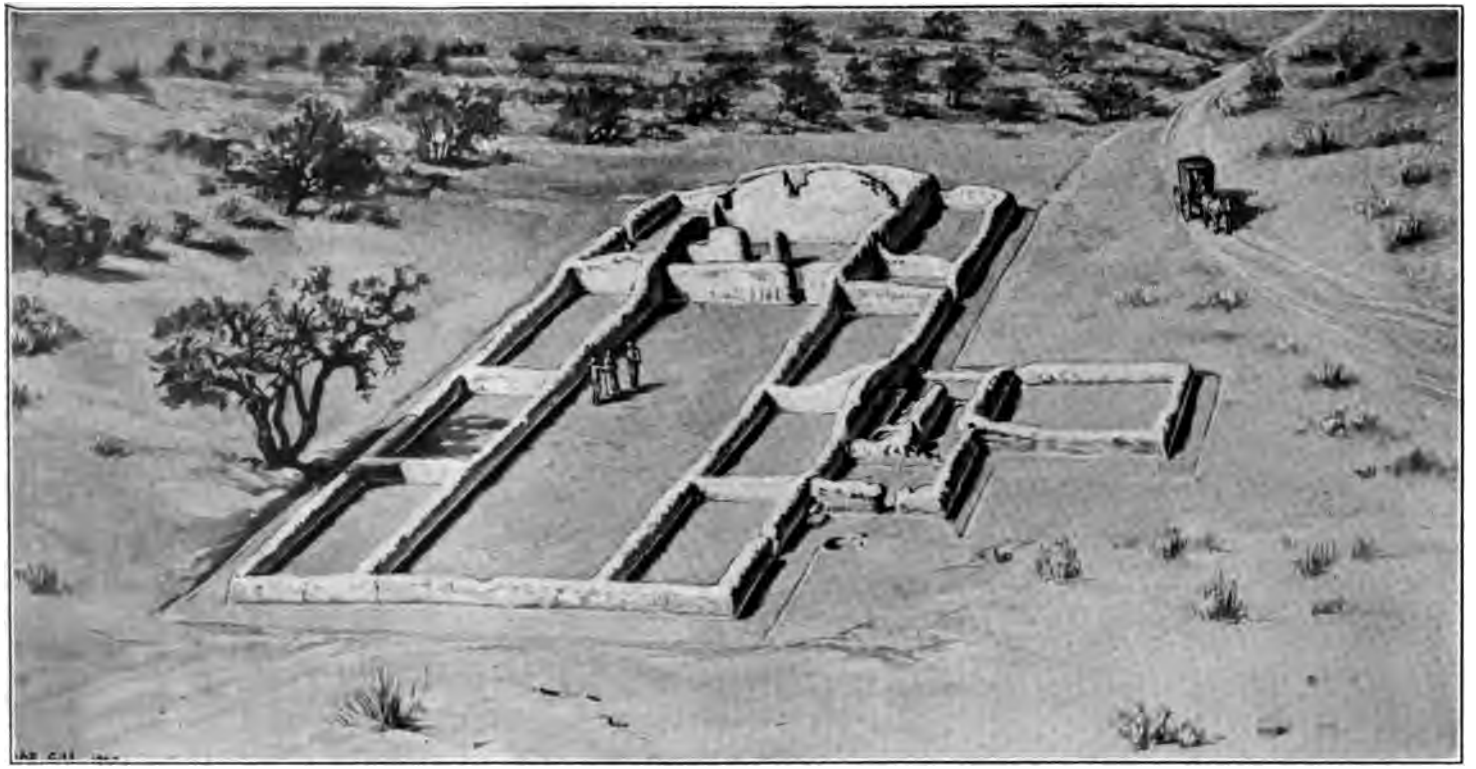
The excavation and repair work at this ruin was done mainly by Pima Indians living on the adjacent reservation. The distribution of an appropriation of this size among Indian laborers was important in its economic as well as its educational aspect. It not only gave them employment, but also increased their self-respect by stimulating a lasting interest in their land and history.

The work at Casa Grande revealed the important fact that there were many more prehistoric buildings on the reservation than were suspected when it was set aside for the protection of the ruin. The facts discovered by excavations point to a large ancient population and to the great antiquity of some of the buildings lately brought to light. The plain around the historic Casa Grande was once dotted with large buildings constructed by a prehistoric race, scattered among which were clusters of houses like Mexican jacales, in which the people lived. Habitations with walls supported by upright logs apparently formerly lined the banks of a network of irrigation ditches and fringed the large reservoirs or wells. The humble dwellings of the people once inhabiting Casa Grande are now represented for the greater part only by mounds that rise a few feet above the plain, while of the art remains of the ancient occupants there are few traces except fragments of pottery strewn over the surface of the plain. This condition of prehistoric human life about Casa Grande appears to have been not unlike that found in ancient Mexico. Large pyramids, foundations of temples, and massive walled buildings devoted to public purposes towered above the lowly habitations of the people. These latter have disappeared; the very massive character of the former has led to their preservation.

These great buildings devoted to public purposes, as temples, granaries, or citadels, in this "prehistoric city of the desert" belong to characteristic structures of the Gila Valley called "compounds." A typical compound is a rectangular area generally oriented about north and south, surrounded by thick walls built of concrete (caleche) inclosing plazas, courts, large houses, and, as we now know, from excavations of the last year, small fragile-walled habitations like "jacales," in which the common people lived. Casa Grande had at least five, possibly six, of these compounds in its neighborhood, scattered over the reservation a few hundred feet apart. Each of the different compounds has its characteristic arrangement of rooms, so distinctive that one is tempted to ascribe to these buildings separate functions, to people them with sociological divisions of the tribe, or to refer them to priesthoods having somewhat different rituals. Near these larger compounds there have been discovered smaller buildings with many rooms, inaptly designated as "clan houses," constructed for specific purposes, possibly ceremonial in nature.



CASA GRANDE, COMPOUND B.



CASA GRANDE, CLAN HOUSE A.

The work at Casa Grande in 1907–8 began with the excavation and repair of compound B (Pl. I), situated over 800 feet north of compound A (Pl. II), the scene of archæological activity in the previous year. The general appearance of compound B before work on it began suggested to several observers two pyramidal mounds resting on a more or less rectangular platform. These mounds and platform were surrounded by other mounds, which investigation has determined to be piles of débris, chance accumulations of earth, possibly refuse of the prehistoric buildings of the neighboring compound.

The mounds were supposed to cover houses like Casa Grande, the rooms of which were filled with fallen walls and drifting sand, but this supposition could be proven only by excavations. The results (Pl. I) show that the pyramidal mounds were artificial foundations for rooms, and that they were formed by accumulations of earth deposited during many years.

The discovery that the pyramidal mounds of compound B were stratified, or that they were built up in stages, as the presence of parallel floors alternating with débris clearly shows, is regarded as an important contribution to our knowledge of their antiquity. It appears from the evidence that the pyramids were formed in the following manner: In the earliest epoch houses occupied part of the areas now covered by the two great pyramids. These houses had cement floors and walls supported by upright logs. After a time the walls of these habitations fell, covering their floors to the height of 2 or 3 feet. Upon this fallen mass later was built another series of houses, each with a cemented floor, fireplace, and upright logs supporting walls. In course of time these walls, like their predecessors, fell, covering the second tier of houses. This process went on for years, and we are now able to trace five well-plastered floors one above the other, separating by hardened clay the fallen remains of the house walls. Toward the top of the pyramids the thickness of the deposit between successive floors diminishes, but the floors at this altitude are better preserved.

If we had some time standard by which the ages of the successive strata of fallen débris between the floors could be measured, it would be possible to calculate the age of these pyramids, but at present no criterion of this kind is available. Serving as borders of these pyramids there is a double wall, or rather one massive wall within another, forming a terrace reminding one of a step in an ancient Mexican temple foundation.

Two kinds of rooms occur in compound B—those with massive walls and others with fragile walls supported by upright logs. The latter type of rooms may be still further divided into two groups, those above ground and those below, dugouts or subterranean in construction.

The rooms with massive walls in this inclosure, as in compound A, served as temples, granaries for storage of corn, or citadels for protection from foes; the houses with fragile walls resemble in construction some of the historic habitations of Pimas and Papagos. Previous to the excavation work last winter rooms of this kind had never been recognized within the Casa Grande compounds, or in their neighborhood. It is probable that clusters of these habitations dotted the whole extent of the plain now embraced in the Casa Grande Reservation.

Both thick-walled rooms and those with more perishable walls supported by upright logs are found mainly in the plazas, but the latter occur also on top of the pyramids.

The typical habitation of the common people of Casa Grande was rectangular in form. Midway in the length of the cemented floor is a circular depression filled with wood ashes and called the "fire hole." Nothing remains of the walls of these rooms but their foundations, imperfectly held together by more or less decayed vertical logs, the mud or clay with which the interstices between the logs were filled having fallen on the floor. As one or more of the logs belonging in front of the fireplace are generally missing, it is thought that this indicates a break in the wall, and that the entrance of the room was situated about the middle of the long side. When these houses were deserted their walls fell as soon as their supports decayed, but the former positions of the supporting logs are indicated by holes containing sand or decayed wood.

That the outlines of the ancient dwellings might not be lost, new logs were substituted for these in their former holes.

The discovery that the habitations of the ancient people of Casa Grande were to all intents culturally the same as modern Pimas and Papagos is believed to be an important contribution to the problem of the kinship of the former inhabitants of the Casa Grande compounds. The objection has always been raised to the theory that the Pimas were descendants of the inhabitants of Casa Grande, that the former when discovered lived in small buildings like jacales, while

the latter, from what archæology taught, dwelt in massive houses. Evidence was unearthed at Casa Grande that the people of compound B had dwellings not unlike the Indians of Pima stock who inhabited the Gila Valley at the advent of the Spaniards.

The discovery of subterranean rooms in compound B is a novel and most instructive one. These rooms were made by excavating a square or retangular hole in the ground, plastering its sides for the walls and its bottom for a floor. One of these rooms lies directly under the foundations of the east wall of the compound a short distance from the northeast angle. This room has a smoothly plastered floor in which is a fire hole. Evidently this subterranean room was built, inhabited, and deserted before the wall of the compound above it was constructed. In order to preserve the evidence of subterranean rooms under walls of the compound, supports were built below the wall and a roof was placed above it to protect it from the rain. This roof is shown in Plate I near the right-hand angle of the bird's-eye view of the compound.

On the west side of compound B, where the bounding wall is highest, a row of shallow pits was discovered at a depth of 7 feet below the original surface. From their appearance there can hardly be a doubt that the caleche or clay used in the construction of the walls was mixed in these pits, and their occurrence below the foundations of the west wall shows that it was constructed after the remaining boundary of the compound.

The terraced form of the pyramids recalls that of the foundations of Mexican temples, and is one of many indications of a southern relationship of the builders of the desert cities of the Gila.

Wooden steps were conveniently placed at certain places, so that a visitor can easily mount the pyramids and examine the various rooms. A bridge connecting the top of the west wall of the compound and the neighboring refuse heap enables one to see the many ancient pits used for mixing concrete found along the foundation of the west wall. Labels were placed at certain places to guide visitors, and a large placard containing historical data was also posted for their information.

The inhabitants of Casa Grande disposed of their dead in two ways—by cremation and by inhumation in their rooms. Both methods of burial occur in compound B. Skeletons of infants were found in rooms on top of the larger pyramids, and bones of adults occurred under a few feet of soil at the southern end of the compound. In the level space between the extramural mound and a few feet from the north wall of the compound there was brought into view by the spade a vase covered with a thin saucer or plate. This vessel was fulf of calcined human bones, some of which were well enough preserved to enable one to determine that they belonged to an adult.

Compound C lies due west of compound B, and is oriented in the same general direction. It has a massive surrounding wall but no central temple or citadel. Apparently the whole inclosure was occupied by perishable dwellings of late construction.

To the east of compound B, about equidistant with compound C, where was formerly a low mound on which grew scrubby greasewood bushes, there was discovered a rectangular building, the central temple or citadel of compound D. On excavation the mound resolved itself into a massive walled building not unlike some of the buildings in compound A. On one of the highest walls black paintings of human hands were still visible.

The most successful excavation and repair work of the winter was done on the mounds which have been given the name "clan house A," situated 750 feet east of compound A. When work began in this vicinity two large mounds were visible among the mesquite trees, but there were no walls above ground.

The excavations at this point revealed the foundations and walls of a rectangular building (Pl. II) 113 feet long by 50 feet wide, containing 11 rooms, a central plaza, and annex on the south side. This annex is composed of 2 rooms, one of which contained a tomb made of concrete placed on a raised platform. In this receptacle were bones and mortuary offerings, indicating a man of importance, possibly a chief priest. The adjacent walls were decorated with colored figures representing birds. The main part of the building extended east and west and contained 11 rooms, the same number that originally existed in the historic building, Casa Grande. On the south side there were 5 rooms, on the north 4, and on the west 1. The most centrally placed room, which had the highest walls, differs from all others in this particular: In the middle there stood a high-backed seat made of concrete. It is suspected that this seat *was* occupied by the chief priest during ceremonies.

Fragments of a low wall were brought to light near this great building in such positions that it is suspected that this was the citadel of another compound, the boundary wall of which is yet to be traced.

The base of all walls, both inside and outside, of compound A and clan house A were carefully protected with Portland cement and ditches were dug to carry away the excess of water from their foundations.

A few hundred feet north of compound A is an oval depression surrounded by a low bank which has been the cause of some speculation. Some archæologists suppose this bank covered walls of a building, others that it is an oval ruin with hidden rooms. The theory that it was a place for thrashing wheat with horses has had advocates. The excavations of the past year show that the bank is constructed of sand and is without walls, indicating that the depression was a reservoir or well.

It was a custom of the Papagos and Pimas a generation ago, and even now in the southern part of the Territory of Arizona, to roast mescal plants in huge subterranean pits by means of stones heated in great fires. This custom was not unknown at Casa Grande and several of these roasting places have been excavated and labeled for the information of visitors.

The aim of all excavation and repair work at Casa Grande was to increase the educational value of the ruin. It was the hope to make it more attractive to visitors and at the same time to protect its walls for posterity.

Casa Grande in its present condition is a type ruin illustrating the architectural features of the great houses of the Gila and Salt River Valleys. By an examination of the repaired structures one can get a good idea of the main characteristics of the architecture prevalent in one of the great prehistoric culture areas of the Southwest.

No appropriation for improvements or excavations was made for the fiscal year 1909, but an estimate of appropriation in the sum of $2,500 has been submitted to Congress, for the construction of a building for custodian's quarters and the exhibition of archæological specimens, to cover the fiscal year 1910, expenditures thereof to be under the supervision of the Secretary of the Interior.

MINNESOTA NATIONAL FOREST RESERVE IN MINNESOTA

The act of January 14, 1889 (25 Stat., 643), entitled "An act for the relief and civilization of the Chippewa Indians of Minnesota" provided for the sale of the lands ceded by the Indians as "pine lands" and "agricultural lands" for the benefit of the Indians.

The act of June 27, 1902 (32 Stat., 400), amendatory of the act of January 14, 1889, makes provision for the examination and classification of the lands and for the sale of timber on the pine lands, in connection with which are the following provisos:

That in cutting the timber on two hundred thousand acres of the pine lands, to be selected as soon as practicable by the Forester of the Department of Agriculture, with the approval of the Secretary of the Interior, on the following reservations, to wit, Chippewas of the Mississippi, Leech Lake, Cass Lake, and Winnebigoshish, which said lands so selected shall be known and hereinafter described as "forestry lands," the purchaser shall be required to leave standing five per centum of the pine timber thereon for the purpose of reforestation, as hereinafter provided, said five per centum to be selected and reserved in such manner and under such rules and regulations as may be prescribed by the Forester of the Department of Agriculture and approved by the Secretary of the Interior: *Provided further*, That there shall be reserved from sale or settlement the timber and land on the islands in Cass Lake and in Leech Lake, and not less than one hundred and sixty acres at the extremity of Sugar Point, on Leech Lake, and the peninsula known as Pine Point, on which the new Leech Lake Agency is now located, which peninsula approximates seven thousand acres, *and in addition thereto ten sections in area on said reservations last aforesaid*, to be selected by the Forester of the Department

of Agriculture, *with the approval of the Secretary of the Interior, in lots not less than three hundred and twenty acres each in contiguous areas*, and nothing herein contained shall interfere with the allotments to the Indians heretofore and hereafter made. The islands in Cass and Leech lakes and the land reserved at Sugar Point and Pine Point Peninsula shall remain as Indian land under the control of the Department of the Interior.

After prescribing certain conditions to be imposed upon purchasers of such timber, and laying down rules for scaling the timber cut, it is provided as follows:

After the merchantable pine timber on any tract, subdivision, or lot shall have been removed, such tract, subdivision, or lot shall, except on the forestry lands aforesaid, for the purposes of this act, be classed and treated as agricultural lands, and shall be opened to homestead entry in accordance with the provisions of this act: *Provided*, That on the forestry lands aforesaid, as soon as the merchantable pine timber now thereon shall have been removed from any tract, subdivision, or lot, as herein provided, such tract, subdivision, or lot shall, without further act, resolution, or proclamation, forthwith become and be part of a forest reserve, the same as though set apart by proclamation of the President in accordance with the act of Congress approved March third, eighteen hundred and ninety-one, and subsequent laws amending and supplementing the same, and shall be managed and protected in accordance with their provisions and the rules and regulations made and to be made in furtherance thereof: *And provided further*, That on said forestry lands aforesaid said pine timber shall be cut clean, except as to the five per centum as hereinbefore provided, and removed under the supervision and direction of the Forester of the Department of Agriculture, in accordance with rules and regulations to be prescribed by him and approved by the Secretary of the Interior, and the said Forester shall have power at all times to patrol and protect said lands and forests, and to enforce all rules and regulations made by him as aforesaid.

In July of 1903, the Department of Agriculture called attention to the necessity for the patrol and protection of the ten sections of land reserved from sale and expressed doubt as to which of the two departments, Agriculture or Interior, had jurisdiction in the matter. Subsequently it was determined that the Secretary of the Interior was charged with administration and protection of said lands and accordingly, under date of August 28, 1903, the Commissioner of the General Land Office was advised as follows:

These lands were ceded by the Indians charged with a trust for their own benefit and, by the act of January 14, 1889, were to be disposed of for their benefit pursuant to the terms of the cession. In so far as the amendatory act of June 27, 1902, operates to divert either the lands or the timber thereon from the uses contemplated by the agreement of cession, it must receive a strict construction, as being in derogation of the express dedication of the lands to a specific trust. These ten sections are not a part of or classed with the two hundred thousand acres of land specifically designated to constitute a forest reserve. There is no declaration or provision bringing them within the descriptive phrase "forestry lands," used in the act. They are a part of "the timber and land" which are "reserved from sale or settlement." It is not specified that they "shall remain as Indian land under the control of the Department of the Interior," as is done in respect to the islands in Cass and Leech lakes and the tracts at Sugar Point and Pine Point, but, as pointed out, they are not within the forest reserve provision of the act, and no other disposal of them is made or direction given for their care or protection. The mere reservation of these lands from sale for an indefinite period and for an undeclared purpose does not take them out of the class of Indian trust lands, nor does it transfer the care and control of them from this department.

Neither the manner of their selection, which is to be "with the approval of the Secretary of the Interior," nor any other provision of law relating to these lands can be construed as implying an intention to remove them from the control of this department. The jurisdiction over these lands remains where it was before their reservation from sale or settlement.

If it be deemed necessary that special precaution be taken for the protection of these lands you will consider the matter and submit a plan with a draft of rules and regulations, if that be necessary. If upon consideration your office is of opinion that additional legislation is needed, you will so report with recommendation as to the form of such legislation.

You submit a further question, not referred to by the Forester of the Agricultural Department, as to jurisdiction over the "forestry lands" after they shall have become a part of the forest reserve. As soon as the timber is removed from any tract of these lands that tract becomes at once a part of the forest reserve, the same as though set apart by proclamation of the President under the act of March 3, 1891 (26 Stat., 1095, 1103), and subsequent laws amending and supplementing the same, "and shall be managed and protected in accordance with their provision, and the rules and regulations made and to be made in furtherance thereof." Forest reserves set apart under said act are under the jurisdiction of and managed and protected under rules and regulations prescribed by this department. This provision clearly devolves the management and protection of tracts that become a part of a forest reserve upon this department. Immediately following that is a further proviso which prescribes that the timber on the forestry lands shall be cut and removed under the supervision and direction of the Forester of the Department of Agriculture "in accordance with rules and regulations to be prescribed by him and approved by the Secretary of the Interior, and the said Forester shall have power at all times to patrol and protect said lands and forests, and to enforce all rules and regulations made by him as aforesaid." The rules and regulations the Forester is thus authorized to enforce are those relating to the removal of timber from said land which are subject to approval by the Secretary of the Interior, and the whole tenor of this proviso shows that it was intended to relate to the time during which the timber is being cut and removed and that it was not intended to interfere with the preceding proviso, placing said lands in a forest reserve subject to the control of this department. This conclusion is further supported by a subsequent paragraph of said act which provides for the appointment by the Secretary of the Interior of a superintendent and assistants and defines their duties as follows:

"Whose duties shall be to supervise the cutting and scaling of the timber sold under the provisions of this act and to see that the rules and regulations prescribed by the Forester and the Secretary of the Interior are complied with, and generally to perform such services in and about the sale of the pine timber on said lands, and the cutting of the same therefrom, and the care and protection of all timber on said lands, as may be required of them by said Forester and said Secretary."

After a careful consideration of the various provisions of the law in question, the department is of opinion that the *duty of managing and protecting these forestry lands after they shall have become a part of a forest reserve rests with this department.* Whatever is to be done by the Forester of the Department of Agriculture in respect to the timber on these lands, both as to the cutting and removal thereof and as to the care and preservation of that left standing for the purpose of reforestation, is to be done in cooperation with this department and with the approval thereof.

Mr. Henry Page, custodian of the Minnesota National Forest Reserve, or the "Ten Sections National Forest," Minnesota, as it is otherwise known, submits the following report of operations during the fiscal year ended June 30, 1908:

Number fires covering more than one acre	5
Number fires covering less than one acre	12
Total number fires	17
Estimated number of acres burned over	170
Total expenses incurred for assistance in extinguishing forest fires on the Ten Sections National Forest	$20.00

In addition to this, much valuable assistance was given in extinguishing fires above enumerated by the available forces under the supervision of William O'Neil, superintendent of logging, and Supervisor G. E. Marshall, of the Forest Service. There were also many fires put out just as they had started to burn by forest-

service patrol along the Great Northern Railway right of way between Cass Lake and Cuba, not enumerated above.

Under authority of the act of June 21, 1906 (34 Stat., 351), bids were called for covering the sale of all merchantable down pine timber and firewood on the "Ten Sections." No bids were received for the firewood. Bids were received for the merchantable down timber as follows, viz:

(1) Burlington Lumber Company, $9.20 per M for white pine, $8.20 per M for nory pine. Bid was for all merchantable down timber on the "Ten Sections." Certified check for $3,445.62.

(2) H. R. King, $6 per M for white pine, $6 per M for nory pine. Bid was for all merchantable down timber on the "Ten Sections." Certified check for $2,466.60.

(3) J. Neils Lumber Company, $9.10 per M for white pine, $9.10 per M for nory pine. Bid was for all merchantable down timber on the "Ten Sections." Certified check, $3,741.01.

The bid of the J. Neils Lumber Company was accepted, and on January 20, 1908, said company, through its contractor, George Cochran, commenced logging operations on said purchase, and operations are still in progress, but will be completed before the expiration of the contract, which allows until September 1, 1908, in which to complete the cutting and removal of the down timber. One scaler has been employed on this work since January 23, 1908, at a salary of $90 per month and his actual necessary traveling expenses. In addition to scaling, he has been required to remain with the sawyers to see that no green timber was cut.

There has been cut and scaled on this purchase, to June 30, 1908:

	Feet.
White pine	522,390
Nory pine	2,630,840
Total	3,153,230

Average number logs to the thousand feet, 12.9+.

Total value of timber to June 30, 1908, was $28,694.42, of which all has been paid in, except the scale bill for June, 1908, amounting to $3,806.71, which amount is not due until August 14, 1908.

The salary of scaler employed, January 23, 1908, to June 30, 1908, amounts to $390, with no traveling expenses so far as reported to me.

Owing to the fact that stubs and rampikes were not included in the estimate of the down timber on the "Ten Sections," also to the fact that the purchaser contracted the cutting and delivery of this timber at a stipulated price per log, instead of per thousand, the usual way of letting contracts, which brings in every piece of timber with 10 feet or more of merchantable timber in it, a considerable portion of which would not be considered merchantable timber by any lumberman, there will be quite a large overrun. The contract as let by Mr. Neils has resulted in the removal of a large quantity of stuff which would not have been removed if under a contract by the thousand feet, and has helped materially in cleaning up the land. In order to get the logs out to the lake or railroad, it was necessary to brush out roads, and it is now possible, as a result, to travel with a horse and buggy on every subdivision included in the Ten Sections National Forest, except two, as far as the work has progressed up to this time.

The work so far has been done in a satisfactory and creditable manner by the contractor, and I believe he is endeavoring to live up to all the provisions of his contract.

By the act of March 3, 1908, entitled "An act amending the act of January 14, 1889, and acts amendatory thereof, and for other purposes," the land embraced in the Ten Sections National Forest, above mentioned, was made a part of a national forest in Minnesota, established by said act, and the supervision thereof transferred to the Secretary of Agriculture.

REPORT OF THE SUPERINTENDENT OF HOT SPRINGS RESERVATION.

REPORT OF THE SUPERINTENDENT OF HOT SPRINGS RESERVATION.

OFFICE OF THE SUPERINTENDENT,
Hot Springs, Ark., October 1, 1908.

SIR: I submit herewith the following report for the fiscal year ended June 30, 1908, being the second since I assumed charge of the Hot Springs Reservation, and the thirty-first annual report since the reservation was established. It gives me great pleasure to advise you that the past year has been a prosperous one, and that the financial disturbances throughout the country have had no appreciable effect in decreasing the number of visitors who came here for the curative properties of the hot waters, but on the contrary, the attendance exceeded all previous records.

GENERAL STATEMENT.

Close attention has been given during the year to keeping the mountain roads on the reservation in good condition, and several hundred loads of cement gravel were used for the purpose. A number of severe storms, accompanied by high winds, occurred during the spring months, destroying many large trees and causing landslides on Hot Springs Mountain, which filled up the gutters, obstructed the roads, and caused washouts. To prevent a recurrence of this in the future, authority was obtained to construct retaining walls, where most needed, on the upper sides of roads on this mountain. In two months' time the regular reservation force, with some additional help, built stone retaining walls 1,676 feet in length, averaging 4½ feet high, 2 feet thick, pointed up and finished with cement. All the stone used was obtained on the mountain, and the total cost of this work was $495. The space back of the wall was filled in with leaves and earth, honeysuckle and other vines planted, and what had been a rough bank of clay and dirt, destitute of grass, was changed into a green background restful to the eye. Following the construction of these walls the slope above was thoroughly cleaned of loose stones and underbrush, and the dead leaves raked off to protect the young pines in case of forest fires. All the dead and down timber on Hot Springs, North and West mountains was cut into firewood and upward of 100 cords were hauled and stacked on the reservation near the government free bath house for use during the coming winter. The underbrush was also cleared off and burned as a precautionary measure against fire.

After familiarizing myself with the details of affairs on the reservation, I became satisfied that good administration required some changes in the policy which hitherto had been pursued in the management thereof. Among other matters I found that the Government

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had invested, upon the recommendation of my predecessor, about $1,000 for installing a pump and motor to pump water to the free bath house and was spending about $200 a year for motor power. While the Government was put to this expense a number of bath houses on the reservation and three off the reservation, as well as one hotel, were being supplied with water by gravity. The act of March 3, 1891, provides that the Army and Navy Hospital, the free bath house, and the bath houses authorized shall be supplied with hot water in the order named. My construction of this law was that Congress intended that the free bath house should be supplied with water before any bath house or hotel, and that supplying bath houses off the reservation with water by gravity, and necessitating the purchase by the Government of a pump and motor and payment of $200 a year for power for the free bath house, was not in accordance with the spirit of the law. I found there would be no practical difficulty in furnishing the free bath house with all the water needed by gravity direct from the springs (about 45,000 gallons daily), and this I proceeded to do at a very slight expense by relaying some of the water pipes. The pumping was then discontinued. In making this change one hotel off the reservation was required to pump water for its bath house instead of receiving it by gravity, and two bath houses on the reservation were required to pump water for their cooling tanks, which were situated too high to receive water by gravity from the reservoir supplying their hot water for bathing.

An additional cooling tank, with a capacity of 14,600 gallons was built on the grounds of the free bath house. At a small expense this tank was connected by piping with the office building and also with the water main along the reservation in front of the bath houses, and the city water disconnected. All the cold water now used on the reservation, in the official residence and grounds, the office building, the free bath house, the government barns, and for watering the lawns, shrubbery, and flower beds is drawn from the cooling tanks constructed during the past year. With nearly 500,000 gallons of hot water running to waste daily it was not deemed good administration for the Government to pay a local water company 30 cents a thousand gallons for cold water, when by the construction of two cooling tanks at a cost not exceeding $300, an unlimited supply of cold water would be available at all times for use on the reservation.

THE FOUNTAIN STREET COLD SPRING.

The cold-water spring on Fountain street is the only one of its kind in the central part of the city where cold water can be had free, and during the busy season and in the summer many thousands of gallons are carried away in gallon bottles and pails for family use. Finding that the supply at times was running low I had the spring, which is on the north side of Hot Springs Mountain, opened up, the walls extended and cemented and the bottom deepened, with the result that the flow has more than doubled, necessitating larger tiling in the pavilion to hold the water. The increased supply has been such as to meet all demands, which have become very heavy. The spring is very popular and much resorted to by visitors, many of whom make use of one of the two footpaths leading from it to the mountain roads above. During the year these footpaths were made

over with cement gravel and the grade rendered easier by putting in several places a number of dressed stone steps 8 feet long, about 30 in all being used. The walks were protected from washouts by cement gutters and catch basins were put in below and connected with tile pipe to carry off the surface water. A substantial stone and cement wall, 150 feet long, 4½ feet high, was also built on the side of one of the paths which borders on the residence grounds, where the grade is very heavy.

RECEIPTS AND EXPENDITURES FOR FISCAL YEAR 1908.[a]

RECEIPTS.

Balances, June 30, 1907:		
In Treasury	$6,989.36	
In hands of chief disbursing clerk of department	380.70	
In hands of superintendent and special disbursing agent, Hot Springs Reservation	50.22	
Repayment into Treasury	.81	
Total balance		$7,421.09
Receipts:		
Water rents for fiscal year	24,240.00	
Ground rents for fiscal year	3,850.00	
Total receipts		28,090.00
Grand total		35,511.09

EXPENDITURES.

Disbursements:			
Salaries for fiscal year	$14,872.00		
Incidentals, repairs and miscellaneous supplies	4,017.19		
Expended by special disbursing agent		$18,889.19	
Expended by the department		2,103.22	
Paid on Auditor's certificates by the Treasury		16.37	
Total expenditures			$21,008.78
Balances, June 30, 1908:			
In Treasury		13,963.80	
In hands of chief disbursing clerk of department		477.48	
In hands of superintendent and special disbursing agent, Hot Springs Reservation		61.03	
Available balance Hot Springs fund, July 1, 1908			14,502.31
Grand total			35,511.09

The number of baths given by the various bath houses and the government free bath house during the year, was as follows:

Total number of paid baths	697,449
Total number of complimentary baths	16,405
Total number of baths at free bath house	184,150
Grand total	898,004

The above totals exceeded those for 1907 by 31,094, 2,224 and 21,430 baths, respectively.

[a] A pamphlet entitled "Laws and Regulations relating to the Hot Springs Reservation," compiled in the department, gives a statement of all appropriations and revenues of this reservation, from March 3, 1877, to December 31, 1907.

BATH HOUSES.

The following table shows the amount of business done by each bath house during the year, the number of tickets sold, the number of baths given, and the total receipts after deducting the amount paid for tickets redeemed. The total net receipts amounted to $197,235.70, an increase over the previous year of $1,367.80. The amount paid to bath attendants under the rates fixed by the department, which came from the bathers and is not included in the purchase price of bath tickets, is given in a separate table.

Business of bath houses, fiscal year ended June 30, 1908.

	Whole tickets.	Half tickets.	Quarter tickets.	Single paid baths.	No. of baths sold.	No. of baths redeemed.	Net paid baths.	No. of complimentaries.	Amount paid redeemed baths.	Total receipts, less redemptions.
Arlington	1,167	952	.....	7,640	41,667	3,893	37,774	616	$1,946.50	$18,303.50
Eastman[a]	338	119	.....	871	9,159	990	8,169	.....	495.50	3,901.50
Park[b]	265	167	.....	528	7,763	1,185	6,578	325	592.75	2,671.35
Alhambra	1,667	1,099	.....	1,500	47,497	6,337	41,160	1,679	1,584.25	9,886.50
Lamar	1,120	1,195	158	926	37,137	4,376	32,811	2,036	1,531.85	11,137.90
Magnesia	1,562	574	.....	530	39,172	4,162	35,010	366	1,040.50	8,364.90
Horseshoe	1,368	994	.....	721	39,389	2,366	37,023	726	473.20	7,335.25
Hale	1,200	792	.....	3,162	36,282	2,819	33,463	519	986.70	11,292.00
Imperial	1,195	665	.....	571	32,216	2,989	29,227	599	1,195.60	11,038.45
Palace	2,075	1,032	.....	858	54,753	7,286	47,467	1,324	1,821.70	11,413.30
Ozark	3,575	2,121	405	1,595	99,905	9,335	90,570	1,265	1,867.00	17,152.00
Maurice	2,567	962	.....	324	63,851	8,954	54,897	139	3,134.00	18,439.30
Majestic	1,339	389	.....	685	32,694	5,014	27,680	726	1,754.90	9,253.60
Rockafellow	1,340	778	.....	757	36,677	2,794	33,883	128	838.40	9,800.55
Rammelsberg	1,862	1,274	781	3,135	59,092	6,335	52,757	1,216	950.25	7,789.50
Hot Springs	656	371	.....	822	18,308	1,837	16,471	477	643.05	5,330.15
Superior	798	341	12	233	20,461	1,863	18,598	435	558.90	5,350.00
St. Joseph's Infirmary	584	176	.....	240	14,264	360	13,904	1,148	108.15	4,004.65
Waverly	860	512	.....	708	23,888	2,931	20,957	695	879.55	6,073.75
Rector	544	343	.....	1,199	16,053	1,791	14,262	687	627.15	4,834.35
Ozark Sanitorium	165	19	.....	145	3,790	327	3,463	105	98.20	996.30
Great Northern	469	344	28	1,510	14,939	1,836	13,103	923	642.70	4,363.50
Moody	735	406	.....	747	20,242	2,116	18,126	144	846.65	6,016.15
Crystal	267	415	.....	939	10,696	600	10,096	127	150.10	2,487.25
Total	27,718	16,040	1,384	30,346	779,945	82,496	697,449	16,405	24,767.55	197,235.70

[a] Two months, ten days only.

[b] Two months, twenty days only.

BATH RATES AND ATTENDANTS' FEES.

Although the year has been a prosperous one, as evidenced by the statement of the income received, certain bath houses, as soon as the bathing season began to decline, started to "cut" the maximum rates established by the department to be charged for baths, in order to compete for the custom of the lower-priced houses. This did not extend to all the higher and better class of bath houses, but it was sufficient to demoralize prices, and caused sharp criticism. This policy, I am glad to say, was not indulged in by any of the bath houses off the reservation, but was confined entirely to the houses on the reservation, which realize large profits and enjoy privileges not accorded to the others. The cut prices prevail during the dull season, but as soon as the tide of visitors comes the prices go up again. In order to effectually stop the practice, I recommend that when a bath house cuts the maximum rate established by the department,

that the new rate be made the maximum rate for said bath house. This will prevent a return to the higher rate when the busy season advances and put the bath house among the lower-priced houses whose business they seek to share only during the quiet season. If the Government is powerless to establish and maintain minimum as well as maximum rates, it can at least absolutely control the maximum price to be charged, and when the higher-priced houses realize that if they cut prices in quiet times to take away the business legitimately belonging to the moderate-priced houses, which maintain the same rates throughout the year, they will have to abide by the reduced rate thereafter and not be allowed to return to the higher prices with the advent of increased business, the practice of cutting rates will come to a sudden end.

I submit herewith a table of the bath rates now in force. A few changes will be recommended later to the department.

Table of maximum rates for course of 21 baths and for single baths.

Name of bath house.	Twenty-one baths.	Single bath.	Name of bath house.	Twenty-one baths.	Single bath.
Arlington	$10.00	$0.50	Ozark	$4.00	$0.25
Alhambra	5.00	.30	Ozark Sanitorium	6.00	.35
Majestic	7.00	.40	Park	10.00	.50
Eastman	10.00	.50	Palace	7.00	.40
Great Northern	7.00	.40	Rockafellow	6.00	.35
Hale	7.00	.40	Rammelsberg	3.00	.20
Horseshoe	5.00	.30	Superior	6.00	.35
Hot Springs	7.00	.40	St. Joseph's Infirmary	6.00	.35
Imperial	8.00	.45	Waverly	6.00	.35
Lamar	7.00	.40	Moody	8.00	.45
Magnesia	5.00	.30	Crystal (colored)	5.00	.30
Maurice	7.00	.40	Rector	7.00	.40

The Secretary of the Interior also fixes the rate charged by the attendants, which is $3 per course of 21 baths, or 15 cents for a single bath in all bath houses, regardless of their rate. There are employed in the 24 bath houses 102 male attendants, 51 male helpers, 45 female attendants, and 13 female helpers, a total of 211. The fees paid to such attendants for the past fiscal year are embodied in the following table:

Attendants' fees during fiscal year.

Bath houses.	Gross amount received.	Amount returned by redemption bath tickets.	Net amount received.	Bath houses.	Gross amount received.	Amount returned by redemption bath tickets.	Net amount received.
Arlington	$6,075.00	$573.95	$5,501.05	Rockafellow	$5,300.55	$419.10	$4,881.45
Eastman	1,322.65	148.65	1,174.00	Rammelsberg	8,582.40	950.25	7,632.15
Park	1,124.20	177.75	946.45	Hot Springs	2,647.80	275.55	2,372.25
Alhambra	6,874.50	950.55	5,923.95	Superior	2,949.45	279.45	2,670.00
Lamar	5,409.90	656.40	4,753.50	St. Joseph's Inf'y	2,052.00	54.00	1,998.00
Magnesia	5,626.50	624.30	5,002.20	Waverly	3,454.20	439.65	3,014.55
Horseshoe	5,703.15	283.80	5,419.35	Rector	2,326.35	268.65	2,057.70
Hale	5,262.30	422.85	4,839.45	Ozark Sanitorium	545.25	49.05	496.20
Imperial	4,668.15	448.35	4,219.80	Great Northern	2,170.50	275.40	1,895.10
Palace	7,901.70	780.60	7,121.10	Moody	2,926.05	317.40	2,608.65
Ozark	14,449.50	1,400.25	13,049.25	Crystal	1,564.35	90.00	1,474.35
Maurice	9,192.60	1,343.10	7,849.50				
Majestic	4,703.25	752.10	3,951.15	Total	112,832.30	11,981.15	100,851.15

WATER RENTS.

My recommendation of last year for an increase in the water rates from $30 to $60 per tub a year, and of the ground rent of the Arlington Hotel from $2,500 to $5,000 per annum having received the approval of the Secretary of the Interior, the same was put in effect January 1, 1908, and made applicable under the law to leases of 13 bath houses as of that date, and to 2 more leases later this year. During 1909, 5 additional bath houses will come within the operation of the law, leaving 4 which can not be required to pay the increased rate until 1910–11 under the terms of their leases.

An examination of the tables which follow, giving the amounts paid the Government for water, and the income received by the bath houses both on and off the reservation during the year, show an increase in the net earnings per tub over last year in a majority of the houses where the water rents were advanced. It will be observed from the table relating to bath houses on the reservation that the general average net earnings is $390.63 per tub; $9.05 per tub in excess of last year.

One bath house which last year realized $718 per tub, fell off this year to $716, while another one which last year showed net earnings of $552, this year shows $625, an increase of $73 per tub.

The tables showing the business done fully justify the advance in rates for the water supplied, and demonstrate that the bath houses, at least those well managed, continue to make very large profits on the amount of capital invested.

Rental paid for water and income received by bath houses on Hot Springs Reservation, year ended June 30, 1908.

Bath houses.	No. tubs.	Tubbage paid.	Net receipts.	Gross earnings per tub.	Net earnings per tub.[a]	Assessed valuation.	Yearly taxes.
Arlington	35	[b] $1,575	[c] $18,303.50	[d] $522.95	[d] $472.10	$10,000	$205.00
Imperial	25	[b] 1,125	11,038.45	441.53	418.35	8,000	164.00
Lamar	40	[b] 1,800	11,137.90	278.45	229.99	6,500	133.25
Horseshoe	30	900	7,335.25	244.50	210.40	6,000	123.00
Maurice	24	[b] 1,080	18,439.30	768.30	712.30	8,000	164.00
Magnesia	30	900	8,364.90	278.96	244.73	6,000	123.00
Palace	23	[b] 1,035	11,413.30	496.23	444.99	7,000	143.50
Ozark	26	780	17,152.00	659.69	625.78	5,000	102.50
Rammelsberg	18	540	7,789.50	432.75	397.62	4,500	92.25
Superior	16	[b] 720	5,350.00	334.37	261.68	6,000	123.00
Hale	26	[b] 1,170	11,292.00	434.61	383.00	8,000	164.00
Total	293	11,625	127,616.10	(e)	(f)	75,000	1,537.50
ADDITIONAL WATER SUPPLIED.							
Arlington Hotel	23	[b] 1,035					

[a] The tubbage and taxes have been deducted.
[b] Tubbage rates increased during fiscal year.
[c] Includes receipts from additional tubs in Arlington Hotel.
[d] Earnings figured on basis of bath house tubbage only.
[e] Total general average gross earnings per tub, $435.55.
[f] Total general average net earnings per tub, $390.63.

The following table gives detailed information concerning the bath houses off the reservation. This does not show the amount of taxes paid, for the reason that nearly all the bath houses are connected with hotels or have apartments to let and the assessment covers both hotels and bath houses, and are not separated on the assessors' books.

Rental paid for water and income received by bath houses off Hot Springs Reservation, year ended June 30, 1908.

Bath houses.	Number tubs.	Tubbage paid.	Net receipts. [a]	Gross earnings per tub. [b]	Gross earnings less tubbage. [b]
Eastman [c]	40	[d] $1,800	$3,901.50	$97.52	$52.52
Park [e]	40	[d] 1,800	2,671.35	66.78	21.83
Alhambra	24	720	9,886.50	411.93	381.93
Majestic	20	[d] 900	9,253.60	462.68	417.68
Rockafellow	18	540	9,800.55	544.47	514.47
Hot Springs	16	[d] 720	5,330.15	333.13	265.63
St. Joseph's Infirmary	8	240	4,004.65	500.57	470.57
Waverly	20	[d] 750	6,073.75	303.68	266.18
Rector	12	360	4,834.35	402.86	372.86
Ozark Sanitorium	4	[d] 180	996.30	249.07	204.07
Great Northern	19	[d] 855	4,363.50	229.65	184.60
Moody	12	360	6,016.15	501.34	471.34
Crystal	18	540	2,487.25	155.45	125.45
Total	251	9,765	69,619.60	(*f*)	(*g*)
ADDITIONAL WATER SUPPLIED.					
Eastman Hotel [h]	[i] 24	[d] 1,080			
Park Hotel [h]	5	[d] 225			
Moody Hotel [h]	2	60			
Ozark Sanitorium [h]	6	[d] 270			
St. Joseph's Infirmary [h]	2	60			
Horse Pool	[j] 2	120			
Total	41	1,815			

[a] Includes receipts from additional tubbage allowed.
[b] Earnings figured on basis of bath house tubbage only.
[c] Open two months ten days.
[d] Tubbage rates increased during fiscal year.
[e] Open two months twenty days.
[f] Total general average gross earnings per tub, $283.67.
[g] Total general average gross earnings, less tubbage, $240.62.
[h] Used in private bathrooms.
[i] Including extra water sufficient to supply 1 tub, authorized by Department letter of Jan. 13, 1891.
[j] Water sufficient to supply 2 tubs.

GROUND LEASES TO BATH HOUSES.

I again call to the attention of the department the injustice of the lease system, which permits the owners of bath houses on the reservation to occupy land on the reservation front worth not far from a million dollars, without paying ground rent for the use of the same, and to renew my former recommendation that you bring this matter to the attention of Congress with a recommendation that the act of March 3, 1891, be amended, so as to confer authority on the Secretary to require the lessees of bath houses on the reservation to pay a rental for the ground occupied, based on a fair rate of interest on the value of the same.

The bath houses have enjoyed long leases and all the benefits of the money spent by the Government to improve and beautify the reservation so as to make it attractive to the visitors, without additional outlay on their part. During the past ten years the total receipts of the bath houses about doubled, and they have received unusually large returns on the amount of capital invested.

The 11 reservation bath houses have great advantage over those off the reservation in securing business, on account of their close proximity to the hot springs, which causes many persons to believe that the water is consequently more efficacious than those some distance away, a fallacy long ago exploded, as the hot water is delivered at all the bath houses off the reservation 30° to 35° hotter than can be

used for bathing. I have heretofore given my reasons why I believe it is only fair and equitable to the Government, which has to stand all the expense of maintaining and protecting the springs and the entire reservation, that the bath houses as a whole, which realize large profits annually, should pay a fair rate for the use of the land they now occupy. I have not the slightest doubt if the present leases could be vacated and re-let by competition for a tenure of years, requiring the persons acquiring them to pay the full value for the buildings and replace the same with modern buildings, the Government could derive an annual income five times greater than that now received.

All the bath houses now having the use of the hot water should stand on the same level, and no advantage shown to any one. This can only be accomplished by a modification of the existing law so as to permit the department to require the payment of ground rent by the lessees on the reservation.

THE GOVERNMENT FREE BATH HOUSE.

The attention of the department was directed in my last annual report to the fact that the government free bath house is far below the standard, that the inside arrangement of the house is very faulty, that some of the cooling rooms have no direct outside light or ventilation and are insanitary. I desire to renew my former recommendation that this condition be remedied.

The main building was constructed in 1890, but various additions were made in 1891, 1893, 1898, and 1899. In 1902 Congress appropriated $25,000 for remodeling and enlarging the building, but the money was mainly used in constructing and fitting up two wings to the old building, the same being completed in 1904. The work was done by contract, and the results show that poor materials were used, and that the Government did not get a fair equivalent for its money. The plastering on the walls disintegrated and will have to be replaced, the woodwork decayed, hundreds of feet of iron pipe were embedded in cinders under cement floors and rusted out, necessitating a change in the system and the installing of new pipe; the asbestos roof and tin gutters were of such poor material that they also have rotted and rusted out, causing bad leaks, and a new roof will be required. The building as it stands is not creditable to the Government, requiring constant repairs, and lacking in sanitary features. With an annual expenditure, however, of a few hundred dollars the building can be maintained in a fair condition for a few years longer, but as soon as sufficient funds are available from the revenues of the reservation and can be spared, a new modern bath-house building should be erected and fully equipped in all respects with the latest bathing appliances, to meet the needs of the thousands of poor, helpless, and diseased persons who avail themselves of the act of Congress providing for "maintenance of free baths for the invalid poor of the United States," and come here seeking restoration to health.

A number of much needed improvements were made during the year under the authority of the department, which have not only increased the bathing facilities but, what is more important, made it more potent for curing many cases and greatly benefiting hundreds of other affected persons who came here and availed themselves of the law permitting the free use of the hot waters. My recommendation of last year for the installation of "pools" in place of indi-

vidual tubs having received the approval of the department, which recommendation was based upon the observation and opinions of leading doctors, who for many years had an opportunity of carefully studying the results of both the pool and tub systems, 10 pools were installed during the year, 6 in the white men's, 1 in the colored men's, 2 in the white women's, and 1 in the colored women's department. These pools replaced 32 tubs and the change was made without interrupting bathing, except to curtail the bathing hours two and a half hours each day. The changes and construction of the pools were made by the regular employees on the reservation force, who cheerfully worked nights in order to hasten the completion of the same. Twenty-four tubs were retained for individual cases. The installation of the pools was immediately followed by a marked increase in the number of bathers. During the first seven months of the year, when tubs only were used, the average number bathed daily was 424, but during the last five months when the pools were in use the daily average increased to 618. The change has fully doubled the bathing facilities of the house, and it is now practicable to bathe 900 daily without overtaxing its capacity.

The following is the record of the free bath house during the year. About one-tenth of the males bathed were veterans of the civil war:

Applications for free baths	6,224
Tickets issued on original application	8,103
Applications refused	436
Tickets reissued on original application	3,491
White males	4,245
White females	751
Colored males	1,455
Colored females	740
Total number of baths given during the year	184,150
Average number bathed daily during the first seven months	424
Average number bathed daily during last five months	618

LEASES.

The different individuals and corporations now holding leases for hot-water privileges from the government reservation, also ground leases, together with the date and expiration of said leases, are given in the following table:

Name of bath house, etc.	Lessee.	Tubs.	Date of lease.	Expiration of lease.
Alhambra	Alhambra Bath House Co	24	Feb. 28, 1894	Feb. 27, 1914
Arlington	Arlington Hotel Co	35	Mar. 3, 1892	Mar. 2, 1912
Majestic	Avenue Hotel Co	20	Jan. 1, 1903	Dec. 31, 1912
Ozark Sanitorium	Ozark Sanitorium Co.[a]	4	Sept. 16, 1905	Sept. 15, 1907
Eastman	New York Hotel Co	40	Nov. 26, 1892	May 11, 1912
Great Northern	Fannie G. Williamson	19	May 25, 1897	May 14, 1912
Hale	Roots & Eastman [a]	26	Jan. 1, 1893	Dec. 31, 1907
Horse Shoe	D. Fellows Platt	30	Jan. 1, 1895	Dec. 31, 1909
Hot Springs	C. H. V. and G. M. Smith	16	Jan. 1, 1903	Dec. 31, 1912
Imperial	Chas. N. Rix and Mary E. Barns [a]	25	Jan. 1, 1902	Dec. 31, 1906
Lamar	M. C. Tombler and G. H. Buckstaff	40	Jan. 1, 1897	Dec. 31, 1916
Magnesia	Chas. B. Platt	30	Jan. 1, 1895	Dec. 31, 1909
Maurice	Maurice, Convers & Maurice	24	Jan. 1, 1897	Dec. 31, 1916
Ozark	F. P. Sorrells and F. B. Latta	26	Jan. 1, 1904	Dec. 31, 1913
Palace	Samuel W. Fordyce	23	Jan. 1, 1907	Dec. 31, 1921
Park	Park Hotel Co	40	May 12, 1892	May 11, 1912
Rector	Elias W. Rector	12	Apr. 16, 1904	Apr. 15, 1914
Rockafellow	Mahala J. Rockafellow	18	July 1, 1901	June 30, 1916
St. Joseph's Infirmary	Sister Scholastica	8	Feb. 1, 1904	Jan. 31, 1914
Superior	Robert Proctor and R. A. Simpson [a]	16	Sept. 15, 1896	Sept. 14, 1906
Waverly	New Waverly Hotel Co	20	Mar. 24, 1893	Mar. 23, 1913

[a] Tenants holding over.

Name of bath house, etc.	Lessee.	Tubs.	Date of lease.	Expiration of lease.
Rammelsberg	Gilbert E. Hogaboom, Aaron H. and Milo R. Buckstaff, Sinclair Mainland.[a]	18	Dec. 31, 1906	Dec. 31, 1908
Moody	Nicholas M. Moody	12	July 1, 1900	June 30, 1910
Crystal	Colored Knights of Pythias	18	Aug. 1, 1903	July 31, 1913
Horse Pool	Simon Cooper	[b] 2	Jan. 7, 1908	Oct. 29, 1912
Eastman Hotel[c]	New York Hotel Co	[d] 24	May 12, 1892	May 11, 1912
Park Hotel[c]	Park Hotel Co	5	....do.....	Do.
Moody Hotel[c]	Nicholas M Moody	2	July 1, 1900	June 30, 1910
Ozark Sanitorium[c]	Ozark Sanitorium Co.[a]	6	Sept. 16, 1905	Sept. 15, 1907
St. Joseph's Infirmary[c]	Sister Scholastica	2	Feb. 1, 1904	Jan. 31, 1914
Arlington Hotel[c]	Arlington Hotel Co	23	Mar. 3, 1892	Mar. 2, 1912
Ground lease		.....	.....	
Ground lease	Hot Springs Mountain Observatory Co.	.....	Oct. 16, 1903	Aug. 31, 1913

[a] Tenants holding over.
[b] Water sufficient to supply 2 tubs.
[c] Water used in private bath rooms.
[d] Including extra water sufficient to supply 1 tub; authorized by department letter of Jan. 13, 1891.

The total tubbage of the various houses, including the Eastman, Arlington, Park, and Moody hotels, Ozark Sanitorium, and St. Joseph's Infirmary, under the act of April 12, 1904, was 608 on June 30, 1908. Reduced tubbage authorized from July 1 for the Great Northern, Lamar, and Crystal bath houses makes the present total 594 tubs.

HOT SPRINGS MOUNTAIN OBSERVATORY.

The steel observation tower on the summit of Hot Springs Mountain, which was constructed on the one acre of ground leased under date of October 16, 1903, to the Hot Springs Mountain Observatory Company, in accordance with plans approved by the Secretary of the Interior, has been fairly well patronized by visitors during the past year, but has not realized that degree of prosperity justified by the investment made. The tower is well constructed and affords a magnificent view of the surrounding mountains and valleys within a radius of from 30 to 40 miles. An admission fee of 25 cents is charged for the ascension, the rate being fixed by the Government. During the past year 14,418 persons were carried to the top of the observatory. The gross receipts from July 1, 1907, to June 30, 1908, were $3,604.50, and the total expenses $1,892.97, making the net earnings $1,711.53, an increase over the previous year of $165.15.

NEW RULES AND REGULATIONS.

The revision of the rules and regulations issued by the Secretary of the Interior on February 1, 1908, was much needed and has enabled me to effectually stop many abuses that had been practiced by the bath houses and the employees, and to check a disposition on their part to ignore some of the rules altogether. The new rule forbidding the employment of any person to act as a mercury rubber or masseur at bath houses without the approval of the superintendent has had an excellent effect and it is now possible to prevent, in a large degree, that which could not be done before—the practice of impositions on bathing patients.

One bath house has developed quite a business which, strictly speaking, is not connected with the bathing system for which its lease was granted. It has a masseur for the massage department, a mercury rubbing department, a chiropodist and manicurist, a bootblack department, and an arrangement with an outside tailor for pressing

clothes while the patient is taking his bath. All these bring in quite an income to the bath house annually, amounting, I am advised, to some thousands of dollars. I believe that a new rule should be added to the regulations, requiring all bath houses employing masseurs, mercury rubbers, or persons to give electrical treatment, from which an income is derived, to state in the monthly bath house report to the superintendent the amount of money received from such extra source. The department should know just how much money each bath house receives under its lease, whether from baths or other sources not contemplated when the leases were originally granted, and if it becomes apparent that the latter is an important factor in the profits of the house, the department can then determine whether further action is necessary.

A number of complaints have reached me from registered physicians that masseurs in certain bath houses have gone to the extent of prescribing medicinally for bathers and treating them the same as if they were physicians, and requesting me to take cognizance of such actions. Inasmuch, however, as no evidence was adduced other than oral statements, the persons treated declining to subscribe to a written statement of the facts on the ground that it would bring them into public notice and subject them to much annoyance, I did not feel justified in taking any action, although believing the charges to be true, but I indicated that prompt measures would be taken to remove any masseur from the reservation for such practices, when satisfactory written evidence was submitted. I feel sure that certain employees of this class are disregarding the rules and that in time the proof will be forthcoming.

THE DRUMMING EVIL.

While substantial gain has been made since the last annual report in suppressing the drumming evil and many lawbreakers have been forced out of business, it still exists in a marked degree, and despite the warning notices distributed to visitors on all the trains coming to this city and the efforts of the Visitors' Protective League and myself many visitors have fallen into the hands of drummers, have been taken to drumming doctors, and fleeced of their money. I felt it to be my duty to afford every protection possible to those coming here to take the baths and have not hesitated to cause arrests and to prosecute violators of the law. Some of the drumming doctors whose arrests I caused were convicted and fined, and others escaped conviction by refunding the money paid by patients, and then inducing them to leave the city before the trial was had. As a rule drummers and drumming doctors are not much disturbed over municipal prosecution, but don't want to be prosecuted by a government officer. They have a wholesome fear, born of experience, of being compelled to account to the Government for violating the law. The Garland County Medical Society and the Visitors' Protective League have been untiring in their efforts, and spent money freely, to eliminate this evil. Substantial results have ensued, but there are discouraging features connected with local political conditions which will have to be met and overcome before the situation clears itself. The state and local laws afford ample protection to the visitor if carried out, but the votes of the drumming element are a great factor in local and county elections, and this has played an important part when endeavoring to secure convictions.

GOVERNMENT LOTS.

The Government still retains title to 169 lots in the city of Hot Springs. Many of these are not advantageously located for residential purposes and will not command a price justifying any sale until a large percentage of the vacant lots now owned by private individuals have been built upon and a demand arises for additional ground. Many of the Government lots have been rendered valueless for building purposes by the action of past city administrations in giving leases to contractors to quarry for whetstone in streets deeded to the city by the government, and this has been carried on to such an extent that at some places unsold government lots now front on a street which has been excavated from 20 to 30 feet below the grade, rendering its use impossible and access to said lots from the street impracticable. I am not aware whether this matter was ever brought to the attention of the department by my predecessors with a recommendation, so that steps could be taken to stop such action on the part of the city and test its legal right to grant or make such leases, but if not I believe it should have been done. About 15 per cent of the unsold government lots are well situated and a number very valuable. These would command a ready sale, but not at prices commensurate with their actual value.

In my judgment no further sale of lots ought to be made for several years, nor until practically all of the vacant private lots in the vicinity are built upon and property gets a fixed value.

Appendix A, prepared in the office of the Secretary of the Interior, shows all lots remaining unsold or undisposed of at the date of this report, the title to which is in the United States, together with the appraisals thereof by the Hot Springs Commission, and under the supervision of the department in 1891, 1895, and 1904.

Appendix B, prepared in the department, shows the manner of disposal and status of all lots laid out by the Hot Springs Commission, or subsequently.

CONCLUSION.

The federal medical board has rendered valuable service to the Government during the past year, having examined a large number of applicants who desired to establish themselves here and prescribe the use of the hot waters, many of whom were found devoid of proper medical knowledge. A good many of those who failed remained here and became street fakers, seeking to sell cure-all medicine at $1 a bottle from a platform wagon on the streets, upon which two colored banjo and song men would attract an audience by their songs and playing.

There has been no change since the date of my last report in the status of claims instituted under the provisions of the sundry civil act of March 3, 1901 (31 Stat., 1188), for the value of buildings formerly located on the Hot Springs Mountain Reservation, which were condemned by the Hot Springs Commission, and destroyed by fire on the night of March 5, 1877, before said commission had issued certificates therefor.

Very respectfully,

W. SCOTT SMITH,
Superintendent.

The SECRETARY OF THE INTERIOR.

APPENDIXES.

APPENDIX A.

Schedule of appraisements of unsold lots on Hot Springs Reservation.[a]

Block No.	Lot No.	Area in square feet.	Appraisals.			
			Hot Springs Commission.	1891.	[b]1895.	[b]1904.
1	1	80,000	$25.00	$500.00	$375.00	$500.00
7	1	[c]	35.00	750.00	500.00	800.00
8	4	35,400	45.00	800.00	500.00	600.00
8	7	24,800	25.00	400.00	300.00	400.00
9	4	46,700	35.00	400.00	300.00	400.00
10	5	52,600	50.00	500.00	450.00	500.00
16	2	67,400	45.00	500.00	400.00	500.00
16	7	60,500	45.00	600.00	400.00	600.00
16	8	37,200	25.00	250.00	175.00	300.00
17	15	30,000	60.00	500.00	425.00	500.00
17	17	21,700	60.00	500.00	375.00	500.00
17	18	21,700	70.00	700.00	500.00	700.00
18	2	15,000	50.00	250.00	200.00	250.00
18	17	14,200	70.00	200.00	100.00	200.00
21	1	99,400	50.00	400.00	250.00	500.00
21	2	67,000	60.00	400.00	400.00	500.00
34	1	61,000	65.00	500.00	350.00	450.00
34	7	47,200	35.00	400.00	250.00	300.00
34	8	61,200	45.00	400.00	200.00	400.00
34	9	43,200	45.00	400.00	300.00	400.00
37	6	107,500	35.00	100.00	75.00	200.00
49	5	11,950	45.00	750.00	500.00	600.00
49	6	12,350	45.00	750.00	400.00	500.00
49	14	10,960	35.00	700.00	450.00	800.00
49	15	19,560	40.00	800.00	600.00	800.00
70	3	5,170	60.00	600.00	400.00	600.00
70	4	5,170	60.00	600.00	400.00	600.00
72	11	37,770	95.00	800.00	600.00	900.00
92	12	26,400	45.00	700.00	1,250.00	1,500.00
92	13	26,250	45.00	700.00	1,250.00	1,500.00
99	8	27,554	45.00	700.00	800.00	1,000.00
99	9	20,400	35.00	700.00	700.00	900.00
100	10	56,020	50.00	1,000.00	1,000.00	1,200.00
102	5	18,400	50.00	1,200.00	1,000.00	1,500.00
114	1	No areas given 1904 appraisal.	By sec. 19, act of Mar. 3, 1877, a tract not exceeding 5 acres was to be laid out by Hot Springs Commission (this was block 114, 3.62 acres, as platted), and granted to county of Garland for county buildings. Act of Mar. 22, 1904, provided for reconveyance this block to Government in exchange for lots 1, 2, 9, and 10, block 94. The block subdivided into 12 lots after reconveyance in 1904, and appraised after general appraisal list had been filed and approved.			2,500.00
114	2					2,200.00
114	3					2,000.00
114	4					1,600.00
114	5					1,200.00
114	6					1,400.00
114	7					600.00
114	8					500.00
114	9					700.00
114	10					700.00
114	11					700.00
114	12					1,000.00
115	[d]3	39,300	50.00	1,000.00	1,250.00	1,500.00
115	[e]4	30,600	50.00	1,000.00	1,250.00	1,250.00
115	[e]5	31,750	50.00	1,500.00	1,500.00	1,500.00
115	[e]6	25,750	50.00	800.00	650.00	1,000.00
115	8	43,000	50.00	1,200.00	1,200.00	1,500.00

[a] Total of 169 lots, including 3 lots selected for Barry Hospital, in block 115, and title retained by United States, unsold in 1908.

[b] No sales took place under these appraisals.

[c] Area not given on appraisal lists.

[d] January 16, 1907, department authorized occupancy portion lot by city for fire-house purposes pending legislation or sale.

[e] Selections, Barry Hospital (see act of June 21, 1894). Title retained by United States.

Schedule of appraisements of unsold lots on Hot Springs Reservation—Continued.

Block No.	Lot No.	Area in square feet.	Appraisals.			
			Hot Springs Commission.	1891.	1895.	1904.
117	1	51,280	$70.00	$800.00	(a)	(a)
118	2	102,700	100.00	600.00	(a)	(a)
118	3	70,500	75.00	400.00	(a)	(a)
120	1	102,300	50.00	300.00	$125.00	$350.00
120	3	69,450	30.00	300.00	125.00	450.00
120	4	62,340	30.00	300.00	125.00	500.00
121	2	67,500	50.00	700.00	400.00	700.00
122	3	62,400	40.00	500.00	200.00	400.00
122	4	48,700	40.00	500.00	200.00	400.00
123	3	69,300	50.00	1,000.00	800.00	1,200.00
130	17	32,000	40.00	150.00	150.00	150.00
130	19	57,900	80.00	200.00	200.00	200.00
138	9	8,670	15.00	175.00	100.00	150.00
138	13	35,580	20.00	100.00	100.00	150.00
138	15	25,170	20.00	200.00	150.00	300.00
138	17	25,420	20.00	200.00	150.00	250.00
138	18	28,200	20.00	300.00	200.00	400.00
138	22	13,875	30.00	400.00	300.00	600.00
139	10	61,700	35.00	150.00	150.00	200.00
140	33	23,400	25.00	200.00	125.00	200.00
144	11	52,710	40.00	300.00	175.00	300.00
144	12	37,850	30.00	300.00	175.00	300.00
145	3	65,379	35.00	150.00	125.00	175.00
149	12	21,360	20.00	200.00	150.00	300.00
150	9	55,640	40.00	300.00	200.00	200.00
150	10	53,070	40.00	250.00	150.00	200.00
159	1	71,100	40.00	300.00	300.00	300.00
160	8	70,150	30.00	250.00	200.00	250.00
163	4	46,750	25.00	300.00	150.00	250.00
163	6	32,000	20.00	200.00	100.00	150.00
163	7	46,750	25.00	300.00	150.00	200.00
164	4	59,100	25.00	150.00	100.00	150.00
164	5	56,250	20.00	150.00	100.00	150.00
165	3	46,700	25.00	100.00	100.00	100.00
165	4	51,620	25.00	100.00	100.00	100.00
165	5	68,160	35.00	150.00	125.00	150.00
165	6	82,220	40.00	150.00	125.00	125.00
165	8	48,430	25.00	125.00	100.00	125.00
165	9	43,320	25.00	125.00	125.00	125.00
166	2	64,510	35.00	100.00	100.00	100.00
166	3	81,650	40.00	100.00	100.00	100.00
166	4	68,320	35.00	100.00	100.00	100.00
166	5	71,260	35.00	100.00	100.00	100.00
168	1	57,010	25.00	75.00	75.00	100.00
168	2	42,630	20.00	150.00	100.00	100.00
168	6	75,000	30.00	150.00	100.00	150.00
168	7	55,840	25.00	150.00	100.00	150.00
169	2	50,770	30.00	330.00	250.00	350.00
169	3	49,000	30.00	250.00	150.00	200.00
169	4	48,870	30.00	250.00	150.00	200.00
169	7	51,670	30.00	250.00	150.00	250.00
169	8	54,750	30.00	250.00	150.00	250.00
170	3	95,900	50.00	150.00	100.00	200.00
170	5	47,800	35.00	250.00	175.00	200.00
172	6	74,870	30.00	200.00	150.00	200.00
172	8	86,470	30.00	150.00	100.00	100.00
172	9	98,280	30.00	150.00	150.00	150.00
172	10	83,310	25.00	75.00	75.00	100.00
172	11	91,350	25.00	100.00	75.00	100.00
173	3	63,875	25.00	100.00	75.00	100.00
173	4	86,220	30.00	100.00	125.00	100.00
175	1	50,630	20.00	50.00	125.00	75.00
175	2	43,270	20.00	50.00	100.00	150.00
175	3	84,730	20.00	100.00	75.00	150.00
175	4	83,250	20.00	100.00	75.00	150.00
175	5	98,350	20.00	125.00	75.00	75.00
175	6	49,510	20.00	50.00	50.00	75.00
175	7	119,170	25.00	125.00	75.00	100.00
175	9	102,300	25.00	175.00	100.00	125.00
176	5	71,190	25.00	150.00	150.00	150.00
178	3	22,000	35.00	500.00	350.00	1,000.00
178	9	68,970	25.00	250.00	175.00	250.00
179	6	53,730	30.00	150.00	100.00	200.00
179	7	52,000	30.00	150.00	100.00	150.00
179	8	82,800	35.00	175.00	100.00	150.00

[a] Erroneously omitted from 1895 and 1904 appraisals.

Schedule of appraisements of unsold lots on Hot Springs Reservation—Continued.

Block No.	Lot No.	Area in square feet.	Appraisals.			
			Hot Springs Commission.	1891.	1895.	1904.
179	9	52,450	$15.00	$75.00	$100.00	$100.00
179	10	58,530	15.00	100.00	(a)	(a)
183	1	77,500	15.00	150.00	100.00	200.00
183	12	17,745	15.00	50.00	50.00	100.00
187	6	56,630	25.00	100.00	150.00	250.00
187	7	66,700	25.00	100.00	150.00	200.00
188	4	29,620	30.00	150.00	200.00	300.00
188	5	35,750	30.00	150.00	200.00	250.00
188	7	36,030	20.00	100.00	125.00	200.00
188	8	48,170	20.00	100.00	125.00	150.00
188	9	48,750	20.00	100.00	100.00	150.00
188	10	46,520	20.00	100.00	100.00	150.00
188	11	49,000	20.00	100.00	100.00	200.00
188	12	49,080	20.00	100.00	100.00	200.00
188	13	41,760	20.00	100.00	100.00	200.00
188	14	49,870	25.00	100.00	150.00	300.00
189	1	34,000	40.00	500.00	375.00	700.00
189	2	68,400	25.00	150.00	150.00	200.00
189	3	68,400	25.00	150.00	150.00	150.00
189	4	59,250	20.00	150.00	150.00	150.00
189	5	41,400	20.00	250.00	200.00	250.00
189	6	36,600	40.00	500.00	375.00	700.00
190	3	66,650	25.00	300.00	250.00	350.00
190	4	121,260	30.00	300.00	250.00	350.00
191	5	49,230	20.00	175.00	125.00	200.00
193	9	33,000	20.00	100.00	75.00	75.00
193	10	42,800	25.00	150.00	100.00	100.00
193	11	29,220	15.00	130.00	100.00	100.00
194	1	51,920	100.00	1,000.00	500.00	250.00
194	2	28,420	300.00	1,000.00	500.00	250.00
194	3	30,000	300.00	1,000.00	500.00	250.00
194	4	23,100	300.00	1,000.00	500.00	250.00
194	5	21,900	300.00	1,000.00	500.00	250.00
194	6	21,450	300.00	1,000.00	350.00	250.00
194	7	23,100	300.00	1,000.00	350.00	250.00
194	8	16,650	300.00	1,000.00	250.00	250.00
194	9	16,650	100.00	1,000.00	250.00	250.00
ABANDONED MILITARY RESERVATION.[b]						
94	3	26,550	$50.00	$1,500.00	$1,500.00	$1,250.00
94	4	29,930	65.00	1,500.00	1,250.00	1,250.00
94	5	34,300	65.00	1,500.00	1,000.00	1,250.00
94	6	[c] 106 x 232	95.00	[d] .40	[d] .35	[e] 3,500.00
94	7	[c] 106 x 235	85.00	[d] .35	[d] .30	[e] 3,000.00
94	8	[c] 106 x 268	85.00	[d] .35	[d] .30	[e] 3,000.00

[a] Erroneously omitted from appraisals, and lot 11, sold in 1892, appraised instead.

[b] All of block 94 reserved for military post by President's order of November 17, 1880; relinquished to Secretary of Interior August 15, 1890, for disposal under act of July 5, 1884 (23 Stat., 103). View taken by department that manner of disposal should be governed by Hot Springs Act of 1891. Lots 1, 2, 9, and 10 disposed of by legislation.

[c] Front depth.

[d] Per front foot.

[e] Per lot.

APPENDIX B.

Schedule showing status of lots platted on the Hot Springs Reservation, Ark.[a]

Block Nos.	Total number lots platted.	Titles acquired under commission's awards.	Auction sales.			Disposed of by special legislation.	Unsold, 1908.
			1882.	1884.	1892.		
		Lot Nos.	*Lot Nos.*	*Lot Nos.*	*Lot Nos.*	*Lot Nos.*	*Lot Nos.*
1	8	4	5	2,3,6	7,8	.....	1
2	7	1–7	.....	.....	.....	.....	.....
3	11	1–11	.....	.....	.....	.....	.....
4	13	1–9,11–13	.....	10	.....	.....	.....
5	9	1–5,7–9	.....	6	.....	.....	.....
6	15	1,2,4–10,12–15	11	3	.....	.....	.....
7	11	2,4–6,8,9	10	3,7,11	.....	.....	1
8	9	1,5,6	3,8	2,9	.....	.....	4,7
9	4	.....	1,3	2	.....	.....	4
10	8	6	4,8	2,3,7	1	.....	5
11	10	2–5,9,10	7	1,6,8	.....	.....	.....
12	8	1–8	.....	.....	.....	.....	.....
13	3	1–3	.....	.....	.....	.....	.....
14	8	1	3,6,8	2,4,7	5	.....	.....
15	5	.....	1,4	.....	2,3,5	.....	.....
16	8	.....	1,3,6	4,5	.....	.....	2,7,8
17	18	4,12–14	1,8	9,11,16	2,3,5–7,10	.....	15,17,18
18	17	.....	1,8,9	4,6,10	3,5,7,11–16	.....	2,17
19	4	1–4	.....	.....	.....	.....	.....
20	16	3–16	.....	1,2	.....	.....	.....
21	7	4–7	3	.....	.....	.....	1,2
22	3	1–3	.....	.....	.....	.....	.....
23	3	1–3	.....	.....	.....	.....	.....
24	7	1–7	.....	.....	.....	.....	.....
25	2	1,2	.....	.....	.....	.....	.....
26	23	1–20,22,23	.....	21	.....	.....	.....
27	5	1,2,5	3,4	.....	.....	.....	.....
28	4	1–4	.....	.....	.....	.....	.....
29	8	2–8	.....	1	.....	.....	.....
30	4	1–4	.....	.....	.....	.....	.....
31	8	1–8	.....	.....	.....	.....	.....
32	5	1–5	.....	.....	.....	.....	.....
33	6	1–6	.....	.....	.....	.....	.....
34	10	3–6	.....	2,10	.....	.....	1,7–9
35	4	1–4	.....	.....	.....	.....	.....
36	4	3,4	1	2	.....	.....	.....
37	9	3–5	1,8	.....	2,7,9	.....	6
38	10	1–10	.....	.....	.....	.....	.....
39	10	1–10	.....	.....	.....	.....	.....
40	8	1–8	.....	.....	.....	.....	.....
41	8	1,3–8	.....	2	.....	.....	.....
42	3	1–3	.....	.....	.....	.....	.....
43	5	1–5	.....	.....	.....	.....	.....
44	6	1–3,6	5	.....	4	.....	.....
45	6	1–6	.....	.....	.....	.....	.....
46	4	1,2	4	3	.....	.....	.....
47	10	5–8	3,10	4,9	1,2	.....	.....
48	10	5–8	1,4	3,9	2	[b]10	.....
49	17	9–13	1,7,16	2,3,17	4,8	.....	5,6,14,15
50	10	1–10	.....	.....	.....	.....	.....
51	11	1–11	.....	.....	.....	.....	.....
52	8	1–8	.....	.....	.....	.....	.....
53	13	2–13	.....	1	.....	.....	.....
54	11	1–11	.....	.....	.....	.....	.....
55	15	1–15	.....	.....	.....	.....	.....

[a] Compiled from records of department and General Land Office in 1908.

[b] Designated in 1881 for schools of Hot Springs, under sec. 5, act of June 16, 1880. Act of April 30, 1908, granted title in fee.